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ORIGINAL ARTICLES.

PATHOLOGY AND TREATMENT OF PARALYSIS FROM POTT'S DISEASE.[1]

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AT first sight one is likely to regard the paralysis that so frequently occurs in spinal caries as the result of direct pressure upon the cord by the bent and distorted spinal column. Reflection as to the history and symptoms of the disease shows that this is not generally the case, and this is also proved by the conditions found on the post-mortem table. The onset of paralysis in Pott's disease is almost always gradual, and it is a well-known fact that cases are not unusual in which an acute angular curvature has existed for many years without any symptoms of paralysis, and yet, eventually, paraplegia may develop.

In a patient who was under my care there had been a prominent antero-posterior curvature in the dorsal region for many years without interfering with the man's locomotion. One day while carrying a heavy tin box and some fishing-tackle he ran across a ploughed field to catch a train. When he reached the train he felt considerable numbness in his legs, and upon arriving home he walked up stairs with difficulty. In twenty-four hours he was unable to stand, and within a few days there was complete paraplegia that lasted several weeks. The patient ultimately entirely recovered after suspension and the application of a plaster-of-Paris jacket.

Were the paralysis the result of bony pressure there would be complete loss of motion and sensation below the point of injury, just as is met with after fracture of the vertebræ or fracture-dislocation; but it is well known that the paralysis in Pott's disease is generally limited to motion.

The relatively large caliber of the spinal canal, compared with the size of the cord, permits of a considerable amount of bending of the spinal column without materially impinging upon the cord. Of course, it does sometimes occur that in an angular curvature there is also displacement of one of the bodies of the vertebræ, followed by complete compression of the cord, but this is not often the case. The spinal cord shows extraordinary tolerance of pressure, if the pressure is gradually produced. It is not an unusual thing to find in an old case of Pott's disease that the cord has been flattened almost into a ribbon, without its functions having been impaired to a marked degree.

The papers that are to be read dealing with the surgical pathology of spinal caries render it unnecessary for me to speak in detail of the changes that occur in the bones.

The inflammation of the bodies of the vertebræ and of the inter-vertebral substance is the first step in the process. This inflammation, which is either tuberculous or scrofulous, results in the breaking down of the substance of the bone, and when this occurs the deformity of the spine follows. The effect of this inflammation is often to cause suppuration, and the pus will either find its way externally or it may penetrate into the spinal canal and there make pressure upon the cord. Frequently, however, no pus is formed. The bodies of the vertebræ soften and break down, undergoing a caseous degeneration, and absorption of the inter-vertebral discs takes place. While these changes are going on there is an extension of the inflammatory process to the dura. The connective tissue between the dura and the bone becomes thickened, with the development of a thick layer of organized lymph between the two, giving rise to what is known as external pachymeningitis. In this semi-purulent form of pachymeningitis, the layer of inflammatory products of caseous or fibrinous material and sometimes with pus in spots, often becomes extraordinarily thick; occasionally it is as much as one-half inch in thickness, and may extend vertically two or three inches.

The inner surface of the dura is usually smooth and unaffected by the inflammation, but there may be an inflammation of the inner side as well, although this is rare. However, when it does occur the internal membranes are also involved, and adhesions take place between them and the dura and the cord.

The pachymeningitis being the result of extension of the inflammation from the contiguous surface of the degenerating vertebral bodies, the inflammatory thickening takes places on the anterior surface of the cord, the result being pressure upon this region and consequently paralysis of motion. The paralysis of motion is sometimes the result of simple

[1] Read before the Section on Orthopedic Surgery of the College of Physicians, October 20, 1893.

pressure upon the cord, but there may also be a myelitis from an extension of the inflammation, and this may extend all the way through the substance of the cord, giving rise to the so-called "transverse myelitis."

On post-mortem examination the cord presents evidence of the compression to which it has been subjected and, as has been already remarked, may sometimes be flattened out like a strip of tape. It may be reduced in size, so that for an inch or two it is not larger than a lead-pencil. When the cord has been compressed, the color is grayish, and in cases of short duration its consistency is soft, while in cases of long-standing it is firmer than usual. The amount of myelitis does not depend upon the degree of pressure, for a considerable amount of myelitis may be found in cases in which the compression has been slight, extending, as has been already said, from the adjacent inflammation in the dura.

Under the microscope there is found a general increase in the interstitial connective tissue, with various changes in the cells, but late in the disease all of the cells disappear. The nerve-elements also undergo degeneration, the nerve-fibers becoming shrunken and having but a narrow sheath of myelin. When there has been extreme pressure, nothing is to be found but a narrow fibrous band at the point of division, which is sometimes difficult to discover, but there is never actual division of the cord itself. The nerve-roots also show signs of the effects of the pressure and inflammation where they pass through the membranes and inter-vertebral foramina. They are often compressed by the thickening of the dura, and they may also suffer from the narrowing of the spinal canal. On section they are sometimes red and swollen, or they may be shrivelled and gray in color.

The symptoms in caries of the spine are threefold: first, those of bone-disease; secondly, those of disease of the nerve roots, and thirdly, those of the changes in the cord itself. These latter may be subdivided into the symptoms depending upon myelitis from extension of inflammation and those of compression of the cord. The symptoms referable to the bone-disease properly belong to the surgical aspect of the subject, but they are so important in aiding us to make a correct diagnosis that it is well to bear them in mind. In caries of the spine there are localized pain and tenderness on pressure at a certain point of the spine. This pain is increased by movements of the trunk and more particularly by the bending of the body forward. At the seat of pain there is usually some prominence or irregularity of the spinous processes, although this is not always present, and is a later symptom in the disease.

If the disease is in the cervical region, movements of the head will occasion pain, and, in order to avoid the pain caused by these movements, the patient usually carries the head stiffly or supports the chin with his hand. Should the disease be situated in the dorsal region there is a compensatory curve in the lumbar region, and any patient presenting a well-marked lordosis, in connection with symptoms of nerve-disturbance in the extremities, should excite our suspicions as to bone-disease, even if it is not possible to detect any deformity in the vertebra. We should not forget that lateral curvature may also be due to caries of the spine and give rise to pressure-symptoms.

Symptoms of disease of the nerve-roots are usually present, although it is stated by some authorities that they are not frequently conspicuous. In my experience, however, there are usually some evidences of irritation or disease of the nerve-roots. These symptoms consist in pain in the distribution of the nerves that emerge at the inter-vertebral foramina in the affected region of the cord. There may be pain in the course of the nerves in the limbs, or the symptoms may be only those of paresthesia, such as numbness and formication. There is frequently more or less girdle-pain at the level of the affected nerve-roots, and occasionally herpes zoster may be met with in the course of the irritated nerves. It is not infrequent, in spinal caries, to find pain referred to the epigastrium, and in one or two cases I have seen severe pain in the hypochondriac region, simulating renal colic.

In irritation of the motor roots we have symptoms of disordered muscular action and wasting of the muscles. Occasionally, there are active muscular contractions as the result of the irritation of the motor nerves. When the cervical spine is diseased, there may be disorder of the sympathetic nerves, with localized sweating and dilatation of the pupils.

The symptoms of the cord-disease, when dependent upon myelitis from extension of the inflammation, are like those of myelitis from any other cause, but, as has been already observed, the myelitis is rarely transverse and is usually confined to the anterior portion of the cord; hence the symptoms are principally motor in character.

The onset of the paralysis is usually gradual and often occurs as the result of some unusual exertion or exposure to cold. The rapidity of development varies and total paraplegia may result in a few days, although it is usually several weeks before it is complete.

The degree of motor paralysis also varies with the extent of the cord-disease; sometimes there is merely stiffening of the limbs, with a spastic gait, with slight impairment in the control of the bladder and rectum, while at other times motor paralysis is absolute. When the paralysis is due to compression,

it is likely to be more complete, with sensory disturbances, as well as the loss of motor power. When the pressure is confined to the anterior portion of the cord, as it usually is, there is only motor paralysis, with more or less weakness of the bladder and rectum. The pachymeningitis may, however, entirely surround the cord, and if there is much fibrinous or caseous exudation the compression will be almost total. When there is bony displacement, in addition to the pachymeningitis, it is readily seen that the compression of the cord will be still greater. Under these circumstances, the motor and sensory paralysis is entire, and there is also paralysis of the bladder and rectum. Bedsores do not generally occur, except as the result of neglect, because, as a rule, the trophic disturbances are not great.

In both forms of cord-disturbance, whether due to myelitis from extension or myelitis from compression, the reflexes are greatly exaggerated, provided the disease is above the lumbar region. The knee-jerks are grossly exaggerated, ankle-clonus is present, and the superficial reflexes are also unduly excitable. Occasionally patella-clonus is present, and the toe-reflex, to which I have called attention elsewhere, may be developed. If the disease is situated as low as the lumbar enlargement the reflexes will be entirely absent and there will be paralysis of the bladder and rectum.

The symptoms, of course, will depend upon the region of the spine in which the disease exists. If it is in the cervical region there may be paralysis of both arms and legs, or if it is in the dorsal region, which is the common seat of caries, there will be simple paraplegia. There is occasionally complete anesthesia, but sometimes this is confined to areas of varying extent over the limbs, and at times we may have associated with loss of tactile sense hyperesthesia. Generally both legs are equally paralyzed, but occasionally one is affected more than the other, and in a patient whose history I shall relate the knee-jerk was exaggerated on one side and abolished on the other side.

Among the complications that may be mentioned are bedsores, cystitis, and contractures. The symptoms may change, owing to the fact that degeneration of the cord may extend from the original focus of disease. An ascending degeneration of the posterior columns will give rise to tabetic symptoms. Gowers asserts that the inflammation may ascend in the pyramidal tracts when the disease is in the lumbar region, and thus give rise to paralysis of the arms.

The course of the disease, once the paralysis has been established, depends to a great extent upon the condition of the bone. If the bone-disease should heal, the inflammation of the cord usually subsides as the pressure becomes less, although if the myelitis exists independently of pressure this improvement does not necessarily take place. The sensory paralysis when present usually passes away early and the motor loss remains for a longer time. The motor paralysis may remain for months and even years before improvement takes place. In one of the cases that I shall report there was total paraplegia for sixteen months, and yet the patient recovered complete use of the legs. In many cases the paralysis gradually passes away, even when the compression of the cord to a considerable degree remains. Should no improvement take place in the condition of the bones the paralysis is likely to remain complete, and although life may be extended for several years, eventually death occurs as the result of bedsores, cystitis, or from the development of tuberculous disease elsewhere. Relapses may occur during the course of the disease, but they are not common. When improvement has once begun it is usually constant.

The diagnosis of compression-myelitis is easily made, provided we find symptoms of bone-disease; and in all cases of spastic paraplegia one should carefully examine the spine for irregularities and for tenderness. This is more particularly to be looked for in children, because transverse myelitis or primary lateral sclerosis is unusual at an early age, whereas spastic paraplegia from Pott's disease is comparatively common in children. A mistake frequently made is overlooking the spinal disease in children, and it is a very serious error as regards the prospects of recovery. I have on more than one occasion seen children with paraplegia made to take as much exercise as possible when there was well-marked caries of the spine present which had not been detected, and when every movement caused pain. The symptoms depending on disorder of the nerve-roots also aid us in making a diagnosis.

The diseases most likely to be mistaken for compression-myelitis are chronic myelitis, transverse myelitis, primary sclerosis of the lateral columns, and, when the disease is in the cervical region, progressive muscular atrophy. Another condition for which paralysis from Pott's disease may be mistaken is syringomyelia. In this disease, however, there is no pain, although the spinal column frequently presents a lateral curvature, and there is the well-known symptom of inability to distinguish heat and cold.

We must not forget that there are other causes of pressure than caries and pachymeningitis. There may be tumors of the cord and aneurism.

The prognosis depends upon the extent of the paralysis, and the region of the cord affected; but there is no disease that gives rise to such complete paralysis of motion and sensation in which we may hope for ultimate recovery, as in paralysis from

Pott's disease. Even after the lapse of months or even years, complete paralysis of motion may pass away and the patient become able to walk with his previous activity. Should there be complete palsy of motion and sensation, as well as paralysis of the bladder and rectum, the prognosis is bad, but even in such cases recovery may take place. If the disease is in the lumbar enlargement or in the cervical enlargement, the chances of recovery are less. We must also bear in mind that the prognosis depends upon the prospect of recovery from the constitutional trouble. The scrofulous or tuberculous tendency may be developed elsewhere and the patient die from lung-disease or disease in some other organ.

TREATMENT.—In many cases of paralysis from Pott's disease all that is necessary to restore the power of motion is to give the patient complete rest, and some cases recover even when only a small amount of rest has been taken. The healing of the bone-disease depends very largely upon rest of the part, and the deformity that results is largely dependent upon the position in which the patient has been placed during the healing of the caries. In some cases, even after the inflammation of the vertebræ has apparently entirely ceased, paralysis remains in spite of complete rest having been enforced for many months. It is these cases that come under the care of the neurologist, and it is in these cases, I am happy to say, that the most gratifying results are obtained.

While complete rest is a necessary element in treatment, it must be supplemented by other means. The most important of these is extension of the spine by suspending the body by the head. The most satisfactory way of accomplishing this is to place the patient in an arm-chair, while from the back of the chair is a bent iron rod which projects above the patient's head. To the end of this rod is attached the cord from a head-sling. It is a good plan to insert between the head-piece and the iron bar a spring balance, so that the amount of extension may be measured in pounds. The apparatus I show you is what is usually employed in these cases at the Infirmary for Nervous Diseases.

The patient begins to have extension for fifteen minutes twice a day, and the amount of traction varies from ten to twenty-five pounds, according to the weight of the patient. The degree of pull is gradually increased and may reach seventy pounds. The length of time that the patient is suspended is increased each day until he sits up with the extension on for three hours at a time. The good effects of suspension are occasionally observed immediately, but sometimes no benefit is seen until after several weeks. I have frequently seen cases that have had rest and spinal jackets, and whose paralysis has remained stationary, yet who made immediate gain after the employment of extension.

Extension is sometimes made while the patient is lying in bed by having a cord and weight passing over a pulley at the head of the bed. This is applicable in children, but in adults the weight of the body is too great to make extension in this way effective.

Suspension after the method of Motschutkowski, of Odessa, in the treatment of locomotor ataxia, is not applicable to paraplegia from caries of the spine, as the patient is usually unable to manage the apparatus as well as an ataxic, and besides, by this method the suspension can be maintained for only a few minutes.

Some assert that the good effects from suspension are due to the straightening of the spinal column, but it is doubtful if very much elongation of the spine can be effected by this means. Others declare that by suspension the spinal cord is actually stretched. Reid and Sherrington[1] have made some interesting experiments in connection with the effect of movements of the body upon the size of the spinal canal. They arrive at the following conclusions: First, that when the body hangs freely and vertically from the skull the capacity of the cranio-vertebral canal is at a maximum; secondly, that with the body in this position, when the weight of the trunk and limbs is taken off by lifting and supporting the body vertically there is a diminution in the capacity of the cranio-vertebral canal, but the diminution is a slight one. They also state that it would appear that by suspension the size of the spinal cord is increased in the adult of middle age to the extent of some 100 cubic millimeters.

Althaus thought it probable that in suspension the spinal cord is materially stretched, and by this means some of the adhesions from chronic meningitis are broken down, thus allowing the freer transmission of nerve influence. In a modified form I am disposed to accept this view. I can scarcely believe that by suspension the cord can be stretched sufficiently to break down adhesions; but I think there is probably sufficient traction made upon it to influence the adhesions between the dura and the thickened connective tissue, and that thus absorption of the exudation is promoted.

There is also another probable effect of the extension, which is to relieve pressure upon the nerve-roots.

The treatment of Pott's disease by suspension seems to have originated with Professor J. K. Mitchell, in 1826, who wrote a paper on this subject. He used this plan principally in children, and the suspension was effected by placing the child in a frame on rollers, with a curved iron bar extending over the head, from which the patient was partially suspended by the head-sling. This method

[1] Brain, 1891.

of treatment seems to have been very successful in the hands of Professor Mitchell, but it fell into disuse, until a few years ago attention was drawn to it by Dr. Benjamin Lee.

In 1889 Dr. S. Weir Mitchell published an account of the treatment of Pott's paralysis by suspension.[1] He reviewed the treatment of his father, Professor J. K. Mitchell, and related his own experience.

I had the privilege of seeing many of the cases that he treated by extension at the Infirmary for Nervous Diseases, and the admirable results that he attained have given me great confidence in this plan of treatment.

Dr. Weir Mitchell's conclusions in regard to suspension are that, by means of it, the spinal deformity is greatly lessened; that it should be used early in Pott's disease, and that no case of Pott's disease ought to be considered desperate without its employment. In regard to the mode of action of suspension he believes that the "pull probably acts more or less directly on the cord itself, and that the gain is not explicable merely by obvious effects upon the mechanical bony curve."

Dr. Leroy W. Hubbard read a paper before the New York Academy of Medicine, March, 1890, on "The Use of Suspension in Pott's Disease," and spoke very favorably of it.

Dr. Putzel, in the discussion on Dr. Hubbard's paper, said that his pathologic studies had led him to believe that the majority of cases of Pott's paralysis were not due to pressure, but to transverse myelitis, and in his experiencewith susp ension he considered it a method that was at best of only temporary relief.

Dr. Birdsall thought that the improvement in paraplegia from Pott's disease was due to the slight separation of the vertebræ and consequent improvement in circulation of the affected parts, particularly the nerve-roots.

Dr. L. C. Gray spoke favorably of suspension in the treatment of paraplegia.

Dr. R. H. Sayre said that, carried to excess, suspension failed to give relief in his experience.

Dr. Phelps considered that suspension should not be used when the vertebral disease was still active.

Dr. E. G. Brackett (*Transactions American Orthopedic Association*, 1891) reported several cases of paralysis from Pott's disease, in which suspension had given good results.

Dr. Benjamin Lee, in the discussion that followed Dr. Brackett's paper, said that he wished to claim for himself whatever honor might attach to having been the first to propose and use self-suspension in the treatment of Pott's disease, lateral curvature, spinal pressure, paralysis, and of the conditions known as spinal irritation. He says that the treatment by suspension is very old, that it was used by Ambroise Paré, and that he got the idea from Hippocrates.

Counter-irritation is useful in many cases as an adjuvant to suspension, and the best way of making this is by the actual cautery, that of Paquelin being the most convenient to use. Sometimes when, in spite of suspension and counter-irritation, the progress of the case is slow, benefit seems to follow the use of internal remedies that have the power of promoting absorption. I have found potassium iodid useful under these circumstances when given in moderate doses.

Of course, in connection with the means already used, it is of the first importance to improve the general health of the patient by the administration of iron and cod-liver oil, and by giving the best and most nutritious food that can be taken. Massage is a most valuable aid, and it should be practised daily by a person well skilled in its use. By this means the nutrition of the muscles is improved, the circulation is stimulated, and a larger amount of food can be assimilated.

The use of the plaster jacket is of value in connection with suspension, and it is best to have the apparatus cut down in front so that it may be removed at pleasure. When the patient is sufficiently convalescent to go about, the half-tanned leather jacket made by Gemrig is helpful in giving support to the spinal column and protecting it from jars and injuries.

When the paralysis remains stationary, notwithstanding the faithful employment of the means already suggested, the question of surgical interference is worthy of careful consideration. Within the past few years the operation of laminectomy has been performed in many cases for paralysis from spinal caries. The results of this operation have been so successful that, with favorable conditions as to the general health of the patient, the operation should be advised whenever the paralysis has resisted the treatment that I have described. The mortality in these operations is comparatively small, and the beneficial effects have been shown by the brilliant operations of Macewen and others.

In my opinion, however, the operation of laminectomy is not indicated in cases in which the paralysis is purely motor. The removal of the laminæ will not relieve pressure, and it is difficult, if not impossible, to remove the exudation on the anterior surface of the cord without injury to the cord itself; moreover, it is not easy to determine beforehand whether the motor paralysis is due to pressure or to myelitis. When an operation is decided upon, the neurologist can aid the surgeon by indicating the point at which the operation should be performed, and in determining this the schedule for the localization of the functions of the segments of the spinal cord, given by Starr in his book on the *Familiar Forms of Nervous Disease*, will be found useful.

The following cases illustrate the advantage of extension, combined with rest, in the treatment of paralysis from Pott's disease.

CASE I.—John T., aged eighteen, a native of Ohio, was admitted to the Orthopedic Hospital and Infirmary for Nervous Diseases, February 16, 1888. He is of healthy family with no history of tuberculosis in any of the members. He had always been strong and healthy until September, 1886, when he was violently bumped against a tree by four of his schoolmates. He suffered acute pain in the spine at the time; the pain was also felt in the epigastrium and radiated thence into the legs and shoulders.

About three weeks after the injury a lump was

[1] American Journal of the Medical Sciences, May, 1889.

discovered in the dorsal region of the spine. He became progressively weaker, and by January, 1887, four months after the injury, he was unable to walk or to sit up. On admission he weighed eighty-four pounds. There was angular curvature at the seventh dorsal vertebra. He could sit up with the aid of a leather spinal jacket which he had worn for several months. He had apparently no power to move the legs. The knees and ankles were in a condition of rigidity; the knee-jerk was exaggerated; ankle-clonus, patella-clonus, and the toe-reflex were all present. The condition of trepidation of the legs, known as spinal epilepsy, was readily induced; the plantar reflexes were exaggerated, but no cremasteric or abdominal reflex could be elicited. Sensation was impaired but not lost. There was no loss of the functions of the bladder or rectum. There was a small bedsore over the sacrum.

The patient was ordered rest in bed and massage, and the Paquelin cautery was applied on either side of the angular curvature. At the end of a month suspension was made by seating the patient upright in bed and having the suspension-apparatus projected above the head of the bed. Two months later he began to sit up in a chair while suspended, and about this time he began to have slight power of motion of the toes, and soon after this the power to flex the feet and legs followed.

On July 23d, the patient was able to move his legs, drawing up the knees while lying on his back. Sensation was improved but not yet perfect. In October he began to walk about with crutches, and from this time he steadily gained in power and soon dispensed with his crutches, but still continued to wear his spinal jacket.

I had a letter from this patient a short time ago, in which he tells me that he has remained perfectly well and that he has a position of "motor-man" on an electric car in Cleveland, Ohio. He says that he works fourteen hours a day and is as active as anyone he knows, as he is able to jump off and on the car while it is in motion, and that he can run as well as he ever could.

In this case it will be observed that the paralysis became complete in January, 1887, and it was not until May, 1888, sixteen months later, that power of motion began to return.

CASE II.—Robert H., aged twenty-one, a shoemaker by occupation, was admitted to the Orthopedic Hospital and Infirmary for Nervous Diseases, December 12, 1892. He had been a patient at Dr. Goodman's clinic since March, 1888, and had been treated with a Kolbe brace for spinal caries. The disease had followed lifting a heavy weight.

On admission the patient complained of extreme stiffness in the legs, with pain in the back extending down the legs. The pain was very severe, and the rigidity of the legs almost prevented locomotion. There was no muscular wasting. The knee-jerk on the right side was exaggerated, but on the left side it could not be elicited. There was no clonus.

The patient was ordered massage, rest in bed, and extension for fifteen minutes daily in the chair, the time to be increased by five minutes daily. On December 22d it was noted that the patient was being suspended for one hour daily and that the legs were more supple. On March 25th the patient was sitting up while wearing a plaster jacket, but still complained of severe pain in the back, and for this the cautery was applied. This immediately relieved the pain in the back, but the man still complained of pain in the anterior part of the thighs. On May 7th he was discharged greatly improved. He was able to walk without trouble, had no rigidity of the limbs, and the pain in the back was only occasionally troublesome. There was now knee-jerk present on both sides; it was exaggerated on the left side, and on the right side it was slightly in excess of the normal reaction.

CASE III.—The patient is Daniel C. B., a mulatto, twenty-seven years of age, and was admitted to the Orthopedic Hospital and Infirmary for Nervous Diseases, April 10, 1893. His father, mother, and eight brothers are all living, and there is no history of tuberculous or of Pott's disease in the family. He is married and is the father of two healthy children. He never had rheumatism and denies venereal disease.

Nine years ago a curvature in the spine was noticed. He thinks it came from a strain. No abscess formed and the legs were not affected. He was in bed at this time for three months on account of weakness of the back, but the legs were not paralyzed. Since that time he has been steadily going about and doing his work as a janitor until three months ago, when he was taken down with influenza and was in bed for one week. When he got up he was able to walk on the first day; on the second day he became very weak in his legs, and on the third day he was forced to remain in bed. His legs became gradually helpless and there was marked pain, which was of a dull, aching character, in the back and on the left side. For six weeks before admission there had been spasmodic contractions of the flexors of the legs and thighs, lasting for a few minutes, and then he could extend the legs with his hands.

Condition on examination: The patient is a light mulatto, with pallid mucous membranes. He lies on his side in bed with the thighs flexed on the abdomen and the legs on the thighs. There is a marked kyphosis in the dorsal spine, but no scars of abscesses. His teeth are bad; his tongue is foul; the bowels are constipated, and he has hemorrhoids. There is no paralysis of the bladder or rectum, and, with the exception of a few uric-acid crystals, the urine is normal. There is complete loss of motion in the lower extremities, with the exception of very slight power to move the toes. The legs are in clonic spasm most of the time. Sensation is preserved, but it is slightly delayed. There are no bedsores, but there is marked wasting of the muscles of the thighs and legs. The knee-jerks are grossly exaggerated; ankle-clonus, the plantar, cremasteric, and abdominal reflexes are present; the toe-jerk on both sides is present.

The patient was placed at rest in bed and was ordered massage and the cautery to the spine; with head-extension, ten pounds for five minutes daily, and increased by five minutes each day. On May

1st, a plaster jacket was applied, to be worn continuously. This has given considerable relief and the patient is able to lift his left leg off the bed. On May 11th he was able to move the toes of the right foot much better. There were still involuntary contractions of the limbs, but these were not so painful. On May 20th, the patient complained of numbness in both legs, from the hips down, and there was impairment of sensation. The patient gradually improved until June 29th, when he again began to lose power in the legs, and from that time until July 23d the legs became almost as helpless as they were when he was admitted. On this date he was ordered potassium iodid, five grains three times a day, and the plaster jacket was reapplied. On August 8th, he was markedly better and from this time the improvement was steadily progressive until October 5th, when the following note was made:

There is no pain, no numbness, or tingling in the legs; sensation is normal. The movements of both legs are performed well in all directions, but they are weak. He can stand alone, and walks about the ward supported by the wheel-crutch. The plantar, cremasteric, and abdominal reflexes are normal; the knee jerks are exaggerated and spastic. There is no clonus. The feet and legs are still cold and sweat freely, and although there is still some muscular wasting it is much less than previously.

This case is notable: first, on account of the prominence of the nerve-root symptoms; secondly, because after improvement had set in there was a relapse; and, thirdly, on account of the apparent benefit from the use of the potassium iodid.

ACNE.

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THE following definition of acne is taken from Jackson's *Diseases of the Skin*:

"Acne is an inflammatory disease of the sebaceous glands and the hair-follicles, due to the retention of sebum; it is characterized by an eruption of papules, pustules, or tubercles, upon the face, neck, shoulders, or chest; it usually begins at puberty and tends to run a chronic course."

In considering the subject of acne, a better understanding of the disease will be obtained by first briefly reviewing the structure and functions of the portions of the skin affected.

The sebaceous glands consist of two portions, the gland proper and the duct. The glandular portion is situated in the corium; the glands are of the racemose variety; the various acini of which these are composed, from two to twenty in number, open into a common duct which empties into the hair-follicle. Each follicle has two or more glands attached.

Embryologically, the sebaceous glands are to be considered as adjuncts to the hair-follicle, even though at a later period in adult life they exceed the follicle in size.

The sebaceous glands are divided by Sappey into three classes: First, those situated on the scalp, the bearded portion of the face, the axilla, and pubes, these being connected with hair-follicles that contain thick, coarse hairs, the hair-follicles predominating over the glands; second, those of the forehead, nose, cheeks, and chest, where the hairs are smaller—of the lanugo type—and the glands are large; and, third, those opening on the free surface of the body, not connected with hair-follicles, such as the glands situated around the corona glandis, the inner surface of the prepuce, the surface of the nipple, the vestibule, and the labia minora. Those of the second class are the most usually affected in acne.

In structure, the glands have a membrana propria and are lined with cubical or cylindrical epithelial cells, of several layers in thickness, these cells being a direct continuation of the cells forming the rete. The cells of the innermost layer undergo a fatty degeneration, and this fat, mixed with fatty acids, cholesterin, fat-crystals, and the remains of the cell-bodies, forms a mass—the sebum—which, passing out through the duct, is discharged into the hair-follicle, and serves to lubricate the hairs.

There have been many terms employed to designate the various grades of severity that acne may assume, but at the present time the disease is generally divided into two varieties, acne simplex and acne indurata; the former being superficially seated and papular or pustular in character, while the latter is deeply seated and pustular or tubercular.

The first step in the development of acne is an excessive formation of sebum in the glands. This sebum, instead of being poured out on the surface of the skin, becomes inspissated, remains in the duct, the opening of which becomes more prominent as the sebum increases. Frequently the plug of sebum becomes tipped with black. This constitutes the condition of comedo, or, popularly, "black-heads." At the same time, an increase of horny epidermis takes place around the mouth of the gland, with an abnormally light, yet firm adhesion over the opening. The simplest form of acne, most frequently seen on the forehead and chin—papular or punctate acne—is then present. These papules are pin-head in size, of a white or pinkish color, and on their summits are seen the black tips of the plugs of sebum. Subjecting one of these comedones to lateral pressure, the plug of sebum can be squeezed out. The black-brown color of this comedo-tip was formerly supposed to be due to dirt. Unna considers it as produced by a

normal pigment-constituent of the secretion of the skin, which he calls ultramarine, and which, under the influence of light, turns black; that such a pigment exists is denied by Krause. Kaposi, in his fourth edition, says he thinks that horny epidermis and fat, when they remain in contact with air for a long time, will become colored, and that atmospheric dirt is probably an accessory to this coloration.

The papular form may remain as such or go on to another form. The plug of sebum acts as a foreign body, and excites an inflammation in the gland-tissue, and we then have the acne papule larger, of a more deeply red color, and frequently with a surrounding areola. The condition of the tissues now being favorable for the development of pus-cocci, some of these gain entrance into the duct, and *pustular* acne is then the result. At this time one's patient presents the acne lesions in their various stages of development—comedones, large and small papules, and pustules. All of these constitute simple acne.

The disease may now remain in this condition, entirely limited to the superficial portion of the skin, and each lesion passing with more or less rapidity through these different stages. The pustules rupture or dry up, and the lesions depending on the grade of inflammation and suppuration which has been present, leaving more or less scarring, though this is usually not strongly marked.

After a variable length of time, if the disease is left untreated, it becomes more extensive and severe. The papules and pustules increase in number, and the individual lesions are larger, extend more deeply into the tissue, and the inflammatory symptoms become more severe; the tissues surrounding the glands are also involved, and the condition of *acne indurata* is then present. The disease is now characterized by lumps or tubercles, which are reddish or purplish in color, varying in size from that of a pea to that of a bean, and quite firm to the touch. Sometimes these lumps are so deeply placed in the skin that but little is seen on the surface, and they can only be appreciated by the touch. At first but few are present, and we have usually acne simplex, with here and there an indurated tubercle. After a time the tubercles become more and more numerous and prominent; several situated close to each other will apparently become matted together by the surrounding inflammation, and rough, irregular, lumpy masses are then seen and felt, reddish or purplish in color, hard, ofttimes very painful, and at times small abscesses may be present.

The skin of persons afflicted with acne is likely to be thick, coarse, and to have an oily or shiny appearance. In some, especially the young and robust, the skin is usually red and hyperemic, but generally the complexion is of a pasty-white color.

In considering the etiology and pathology of acne, three processes must be borne in mind: the comedo-formation, the inflammation excited in the gland and surrounding tissues by this plug acting as a foreign body, and the invasion of the pyogenic cocci causing suppuration.

The disease generally first appears at puberty and continues until full development is reached, say from the sixteenth or eighteenth year until the twenty-fifth or twenty-seventh, though it is frequently met with after this age. It is generally of more frequent occurrence and begins earlier in females. At the time of puberty there is a great developmental activity of the glands and hair-follicles. It is probable that in certain persons this activity of the glands is not only greater than it should be, but also that the product of such glands, which normally is a fatty or oily secretion, becomes perverted, and in addition, that the normal extrusive power of the gland is also deranged. At the same time, a parakeratosis of the surface and of the lining of the duct is taking place.

Certain individuals are more predisposed to acne than others, such as those with a thick, pasty complexion, and in such cases the mouths of the follicles are prominent. So-called scrofulous persons, those whose health is not the best, and persons with seborrheal eczema also manifest a predisposition.

The exciting causes are generally considered to reside in disturbances of the digestive, excretory, and sexual organs.

Whether disturbances of the sexual organs *per se* will produce acne has been questioned. That such disturbances and acne are ofttimes found in the same person is true, but it has been claimed that a lowered condition of the system generally and the influence that sexual derangements have upon the digestive organs can more frequently be blamed for the acne.

The statement is ofttimes made by female patients that their acne is worse at about the time of the menstrual period. A number of observations made by me during the past several years have shown that these patients were generally extremely costive and suffered from gastric disturbances; that when laxatives were administered and the diet carefully regulated as regards quality of food, especially avoiding the easily-fermentable foods, these exacerbations of acne did not occur. This fact would seem to disprove the statement made, unless it be argued that keeping the bowels clear reduced obstructive congestion of the pelvic viscera. On the other hand, a brother practitioner, whose labors are principally in the field of gynecology, has lately informed me of three patients under his observation whose acne always improved with the advent of or during menstruation.

It may be stated in broad terms that any cause that will lower the general health of a person will contribute to the development of acne. Over-eating, or the eating of improper food, as, *e. g.*, the excessive use of sugars and starches, which easily undergo fermentation in the stomach; over-drinking of malt or spirituous liquors, or of tea; constipation; excessive mental or physical work; the conditions of the system which give rise to gout, lithemia, oxaluria, uremia, or anemia; chronic malarial poisoning—all these are factors in the production of the comedone. Seborrheal eczema, and the condition of rosacea to which it leads, should also be recognized as important factors in the production of acne. The frequency with which seborrheal eczema is met with in acne-patients leads me to regard the association as more than merely coincidental. I think that very many cases of acne have their starting-point in the seborrheal eczema. Patients having the two diseases after being cured of them so far as the face is concerned, but failing to properly carry on treatment for the seborrheal eczema still remaining in the scalp will have a return of the acne with the next exacerbation of the seborrheal down on the face, and especially is this the case in patients past forty years of age.

Seborrheal eczema we find existing as slightly yellowish, or yellowish-gray, or slightly reddish, circumscribed, scaly patches occupying the forehead, temples, or neck, at the edges of the hair, on the cheek, or in the naso-labial fold, or more frequently, as a congested condition of the forehead, nose, cheeks, immediately beside the nose, and on the chin, associated with slight scaling or with papules from the size of a mustard-seed to that of a pea, sometimes smooth, at other times covered with yellowish, fatty scales; with this condition of the face there will always be more or less dandruff of the scalp.

Bearing in mind then the conditions that predispose to acne, the exciting causes and the pathologic changes that occur, we have an index to the measures to be pursued for its relief.

The regulation of the various functions of the body are familiar to all, and must be followed on the general principles that govern the treatment of these conditions. I shall, therefore, not speak of them, but consider the means directed against the disease itself.

As the comedones are the first exciting cause of the inflammation in the gland, they should be removed as soon as possible. For this purpose their mechanical expression by means of a comedo-extractor will be found of advantage. For the excessive formation of horny epidermis over and around the mouth of the follicle, mechanical or chemic means are necessary. Of the former, scraping with a curet, frictions with some coarse substance, such as finely powdered marble-dust, corn-meal, or pumice-stone, will effect the necessary change. As these means are not always agreeable to patients in private practice it may be better to try the chemic agents, such as salicylic or acetic acid, or the alkalies, such as potash-soap, spirit of green soap, liquor potassii, made up into ointments or pastes or lotions; or reducing agents, such as resorcin, sulfur, or the mercurial salts.

For the inflammatory reaction likely to be excited by the curetting or the energetic action of chemic agents, zinc oxid, carbonate of magnesia, corn-starch, ichthyol, will be found useful. As antiseptics, corrosive sublimate, boric acid, resorcin, and sulfur are among the best, and to restrain the excessive glandular activity and stimulate the skin to healthy action nothing is superior to sulfur.

To understand better the use of these various remedies in the different stages of acne let us suppose a case of indurated acne with large, red, painful tubercles and pustules, and consider its treatment. Having given all necessary attention and direction as regards the system generally and corrected all derangements, we will, if the patient permits, with a dermal curet scrape off the tops of the pustules and express their contents; with a dermal lancet or a small scalpel incise the tubercles and let out the pus found in them, and with the comedone-extractor press out comedones.

Bleeding should be encouraged for a short time by compresses dipped in a warm saturated solution of boric acid, the bleeding lessening the congestion and the boric acid at the same time acting as an antiseptic. Then to soothe the inflamed painful face zinc oxid and magnesium carbonate, with or without ichthyol, in lotion or in Bassorin paste, may be applied several times daily. After the reactionary inflammation has subsided a lotion containing mercuric chlorid is applied during the day and a resorcin-paste at night. The bichlorid acts as an antiseptic to prevent the formation of new pustules and also stimulates the glands to more healthy action, while the resorcin acts in very much the same way as does sulfur. If the horny epidermis is abundant, salicylic acid may be added to the paste. All of the pustules, tubercles, and comedones cannot, of course, be treated at the first consultation; therefore this mechanical treatment will have to be repeated until the face is in a fairly good condition.

The face should be washed daily with warm water and soap, and if the skin be thick, a potash-soap will be useful, while upon thin, sensitive, inflamed skins an ichthyol-soap will be of service. In either case the lather should be permitted to remain on the face for several minutes—from five to fifteen—rinsed

off with cool water, the face dried, and whatever remedy is employed, then applied.

When the acute stage of pustulation has subsided, stimulating remedies will come into service, and of these sulfur in some form is the best. The sulfur may be employed as an ointment; in the "lotio alba," made by mixing together solutions of sulfuretted potassium and zinc sulfate, to which some sulfur is then added, or it may be suspended in Bassorin paste, which has the advantage over ointments of drying in a short time, making a smooth, even dressing on the skin, keeping the remedy in close contact for a length of time, and of being easily removed with warm water.

In this way the disease will soon be brought under control. Then should come a period of after-treatment, the object of which is the prevention of relapses. Here the most service will be secured from the long-continued use of a feeble resorcin, or resorcin-sulfur, or resorcin-sublimate lotion.

Internally arsenic has long been held in great esteem. It will not be of service used alone, or during the acutely inflamed stage, but at later periods or when a condition of parakeratosis, exists, then, in conjunction with external remedies, it will do good.

Ergot has also been extolled, but my results with it have been disappointing, except that it is useful at times to lessen the vascularity of the face; but it has seemed to me that this could be better obtained by the use of local sedative and antiseptic remedies in a much shorter time.

When patients will not permit such surgical measures as I have mentioned, a slower course of treatment will have to be adopted. Antiseptic applications must be employed until suppuration ceases, combined with remedies to reduce excessive horny formation and to alter the action of the sebaceous glands.

The frequent and intimate association of seborrheal eczema with acne should direct attention to this condition, and especially after the acne has been cured should treatment be continued against the still existing dandruff. The remedies that will prove of most service will be resorcin, sulfur, boric acid, salicylic acid, chrysarobin—in fact all of those belonging to the class of reducing agents.

In the discussion of Dr. Holsten's paper, Dr. James McF. Winfield said:

The thorough manner in which Dr. Holsten has gone into the subject and the treatment of acne, leaves but very little for me to add, except perhaps a word as to the part genital reflexes play in the production of acne. In writing on acne great stress is put upon disturbances of the gastro-intestinal tract, as the great exciter of this common and exceedingly annoying cutaneous disorder. While the genital organs with their reflexes are to a greater or less extent ignored, I am inclined to the belief that the sexual tract is more likely to reflect its hyperemia on the face than upon any other organ or tract of the body. It is a fact that the simple form of this disease is observed during youth—a time of life when the sexual organs are in a state of unstable equilibrium; and furthermore, rosacea is more frequently observed late in life when the sexual and procreative powers are on the decline. We have all seen an active outbreak of acne on the face of a young woman about the menstrual period, while during the interim she is perfectly free from it. The gynecologists teach us that both acne and rosacea are common accompaniments of various diseases of the female genital organs, and, also, that after the cure of these diseases the acne disappears. American authors have paid more attention to the treatment of acne by remedies directed to the relief of genital irritation than foreign writers. Piffard, Dunslow, and Sherwell have written the most on this line of treatment. Dr. Piffard, in his work on *The Materia Medica and Therapeutics of the Skin*, published in 1881, recommends that strict search be made for sexual causes of acne and the proper therapeutic measures applied. In about the same year Drs. Dunslow and Hyde published their papers on the ergot-treatment of acne. They, however, thought this drug produced its good effect by its tonic action on the non-striated muscles surrounding the sebaceous glands. I have not seen much marked benefit from ergot upon acne in the male subject; but its good effects cannot be denied in certain cases in females when the menstrual functions are irregular; but in these cases the result seems to come from its oxytocic power rather than from any tonic effect on the involuntary cutaneous muscles. I have found it well to give ergot in doses of from fifteen to twenty drops, t. i. d., beginning four days before the expected period. This is given as a supplement to hot vaginal douches.[1] In 1884, Dr. Sherwell read a paper before the American Dermatological Association on "The Treatment of Acne in the Male Subject by the Passage of the Cold Sound." This paper was followed the next year by one by Dr. Dunslow entitled "Urethral Irritation in the Male the Cause of Certain Neuroses, and also of Acne." All of Dr. Sherwell's cases had hypersensitive urethras, while Dr. Dunslow goes a step further and reports cures following the relief of urethral strictures.

I am able to indorse Dr. Sherwell's method, or in fact any other method or treatment that will relieve the genital irritation which is so common in

[1] See paper published in Journal of Cutaneous and Genito-Urinary Diseases, March, 1891.

the disease under discussion. I have had excellent results from the cold sound in the male cases, and also from the hot vaginal douche in the female.[1] And I think it would be well to add to the treatment of acne some means directed to the relief of genital irritation.

THREE SPECIMENS OF TUMORS OF THE HEART: METASTATIC CARCINOMATOUS NODULE IN THE MYOCARDIUM, IMPLANTATION-SARCOMA OF THE RIGHT VENTRICLE, PRIMARY ROUND-CELLED SARCOMA OF THE EPICARDIUM.[2]

BY LUDVIG HEKTOEN, M.D.,
OF CHICAGO.

IN his recent review of the literature concerning tumors of the heart, Alessandro Tedeschi[3] estimated that about 80 cases have been described, to which number he added three of his own. Martinotti collected 60 cases in 1886, and in 1891 Pil and Bret found 77. The *Index-Catalogue* of the Library of the Surgeon-General's Office at Washington—the volume finished in June, 1884—contains references to 85 cases, and this number does not include echinococcus-cysts, gummata, or tuberculous masses, and the *Index Medicus* from 1885 to 1892 inclusive has references to 21 additional cases, so that it would seem that the grand total at the present time must be about 110 instances. Under any circumstances this will indicate sufficiently well that tumors of the heart are among the rarest of conditions.

The majority of cardiac neoplasms are secondary, consequently, as a rule, either carcinomatous or sarcomatous, the first being the more frequent. It is very seldom that the heart becomes involved by direct extension through continuity and contiguity of tissue on the part either of a sarcoma or a carcinoma of an adjacent organ. The primary cardiac neoplasms are necessarily mesoblastic in origin, and instances of almost all the forms of mesoblastic tumors are described in connection with the heart. Berthensen[4] found 28 primary heart-tumors to include 9 sarcomas, 7 myxomas, 6 fibromas, 3 carcinomas (Krebsgeschwülste, etc.), 2 fatty tumors, and 1 cyst.

I shall describe an instance of each of the following forms of cardiac tumor, namely: A metastatic carcinomatous nodule in the wall of the right ventricle secondary to a medullary carcinoma of the breast; an implantation-sarcoma of the right ventricle, secondary to an osteo-sarcoma of the tibia; and, finally, a primary round-celled sarcoma, originating in the epicardium upon the anterior surface.

All of these cases occurred in the Cook County Hospital, of Chicago, during 1892 and the beginning of 1893.

CASE I. *Medullary carcinoma of the breast; general dissemination; nodule in the wall of the right ventricle.*—A woman, fifty years of age, died from an ulcerated medullary carcinoma of the right breast. The post-mortem showed metastases in the lungs, the peritoneum, the liver, the Fallopian tubes, the uterus, and the pericardium. In the wall of the right ventricle at the right border was a mass 4 x 3 x 2.5 cm. in size, situated beneath the pericardium, and projecting up into the wall of the auricle; it was surrounded by large vessels, was very firm, grayish-white, and infiltrating; and in the immediate vicinity were smaller masses. The endocardium was not changed.

Manifestly, this metastasis occurred through the coronary arteries during the process of general dissemination.

CASE II. *Spindle-celled osteo-sarcoma of the tibia; implantation-sarcoma of the right ventricle; extensive pulmonary dissemination.*—The following is an extract from the clinical record: A boy, twelve years old, was sent to the hospital with the diagnosis of osteo-sarcoma of the upper end of the left tibia. Disarticulation through the knee-joint was performed in January, 1892. In February recurrence took place at the lower end of the femur, and on May 14th disarticulation at the hip was performed. The patient was discharged four weeks later in good condition, but was readmitted July 30, 1892, into the service of Dr. C. A. Earle, on account of shortness of breath, nocturnal cough, and loss of flesh and of appetite. The examination then showed: Anemia; no local recurrence; the left chest moved less than the right; there was dulness on percussion over the upper third of the right lung, and over the middle third of the left posteriorly; bronchial breathing and resistant bulging of the intercostal spaces were present. The bones and joints, as well as the abdominal organs, were apparently normal. On August 4th the area of dulness over the left lung had extended downward. There was no palpable apex-beat, but epigastric pulsation could be made out; the sounds were rough, the first sound being almost changed into a murmur. On August 8th flatness was noted over the entire left lung, the heart's dulness not being distinguishable. The intercostal spaces were bulging over the flat areas. The sputum contained large, nucleated cells, but no tubercle-bacilli (ten slides, Dr. Eastman). Weakness and dyspnea increased, and death occurred August 14th, about eight months after the appearance of the first swelling upon the left tibia. The clinical diagnosis was secondary pulmonary sarcoma.

The post-mortem examination showed no recurrence in the tissues about the hip; the sciatic nerve presented microscopically an amputation-neuroma.

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[1] Ibid.

[2] The specimens were presented to the Chicago Pathological Society, Oct. 10, 1893.

[3] Prag. med. Wochenschr., 1893, Nos. 11 and 12.

[4] Virchow's Archiv, Bd. cxxxii, H. 3.

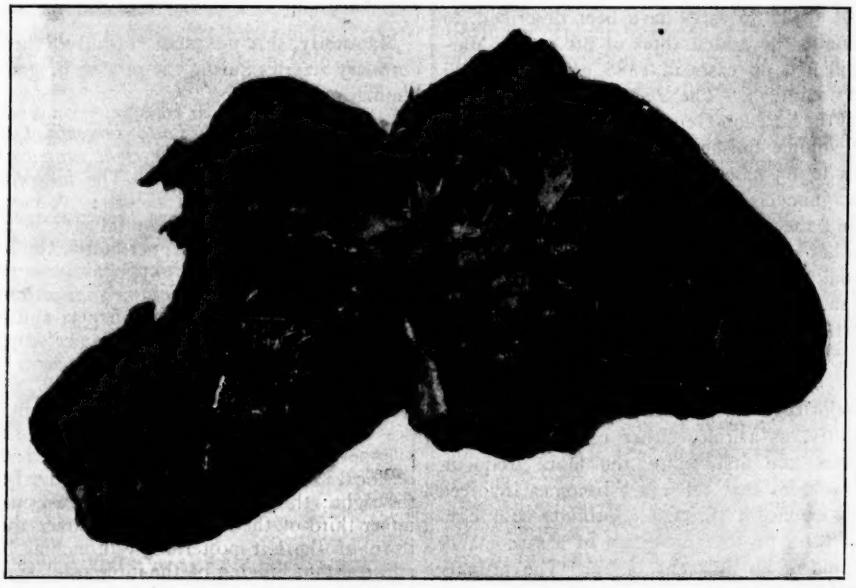
There were no growths in any of the vessels below the heart or in any of the abdominal organs. Externally the heart presented an unusual prominence along the right ventricular border, which could be felt to be due to a nodular growth in the right ventricle. The heart weighed 250 grams. It was found that from the wall of the right ventricle along the right border sprang a lobulated mass of white, hard tissue which formed an intra-ventricular, nodular growth filling very nearly the whole cavity, projecting up underneath the tricuspid valves, and leaving only the upper part of the ventricle free to transmit the blood into the pulmonary artery. This mass was grayish-white, firm, containing in some places hard bony masses; it extended in between the muscular trabeculæ and down into the myocardium of the ventricle; the free surface was smooth, nodular, free from thrombotic deposits and from evidences of surface-disintegration. Otherwise the heart was normal. In spite of the manifest stenosis of the tricuspid orifice there was no hypertrophy or dilatation of the right auricle.

The lungs were of increased volume and weight, filling the chest to distention. They contained huge masses of whitish-gray tumor-tissue, which in some places grew into the bronchi, which thus communicated with foci of mucoid degeneration; these masses crowded the pulmonary parenchyma in all directions; they were sharply defined, almost encapsulated, in places undergoing mucoid degeneration, but mostly dense and hard, containing distinct osteoid districts that nicked the knife and scratched the palpating finger. The microscopic diagnosis was: Small spindle-celled osteo-sarcoma of the heart and the lungs. The structure was so typical as to render any detailed description quite unnecessary. In some places mucoid degeneration was present. Islands of osseous tissue were present in the cardiac as well as in the pulmonary growths.

It is to be regretted that a very minute and painstaking examination of the heart was not made during life, with a positive diagnosis of its condition in view, because it does seem probable that under the circumstances an approximately correct opinion could have been reached, although it must be acknowledged that the pulmonary lesions presented overwhelmingly prominent symptoms and signs. Thus the heart's dulness could not be distinguished on account of the adjacent pulmonary tumor-masses.[1]

The absence of hypertrophy of the right auricle, which the anatomic condition seems to have rendered unavoidable, may be quite rationally explained as due to the increasing cachexia, which is in accordance with the views generally held as to the absence of cardiac hypertrophy under analogous local and general states. Then again the marked diminution in the size of the cavity of the right ventricle may in part explain the absence of the hypertrophy, as the blood was probably forced directly through the upper part of the ventricle into the pulmonary artery.

Another very interesting feature in this case is the mode of formation of the metastasis in the right



Osteo-sarcoma of the right ventricle, due to implantation, and secondary to osteo-sarcoma of left tibia. (Case II.)

[1] Berthenson's article, "Zur Frage von der Diagnose primärer Neoplasmen des Herzens," loc. cit., covers this portion of the subject thoroughly.

ventricle. The metastatic process was confined entirely within the limits of the lesser or pulmonary circulation, into which sarcomatous emboli were introduced from the primary or the recurrent tumors in the left lower extremity through the blood-current in the ascending vena cava. In reality, the metastasis in the right ventricle depended either upon implantation upon the endocardium of sarcoma-cells coming directly from the primary or recurrent tumors, or it was due to infection carried back again from the secondary pulmonary growths. Sarcomatous emboli from the lungs might under favorable circumstances reach the right ventricle along either of the two following routes:

1. Through the pulmonary veins, the left auricle and ventricle into the coronary arteries, lodging in the capillaries of the myocardium; this route brings the systemic circulation into play, and in the absence of generalization of the secondary tumors, which would seem well-nigh unavoidable under these circumstances, any further discussion upon this particular point is unnecessary.

2. Through the bronchial veins, the vena azygos major and the superior intercostal vein, the superior vena cava, into the right auricle and ventricle, endocardial implantation of the sarcoma-cells leading to the formation of the large metastatic growth. Consequently there is practically no other explanation to be offered of the mode of growth of the tumor in the right ventricle in this case than by implantation directly upon the endocardium of sarcomatous cells or a mass coming through the inferior cava from the primary or recurrent tumors, or through the superior cava from the secondary pulmonary growths. In all likelihood the implanted cells came directly from the tumors in the extremity, along with the other emboli which were carried directly into the pulmonary capillaries. Of course it is not at all impossible that the implantation-sarcoma in the right ventricle distributed cells and masses into the lungs from time to time.

The instructive observations of a number of pathologists showing free tumor-cells and particles in the blood have, of course, a very direct bearing upon the question of growth from endocardial implantation. Bozzolo found tumor-particles in cruor masses in the right ventricle; v. Recklinghausen found sarcoma-bits in the right ventricle growing upon the endocardium between the papillary muscles; and Rieder, Weber, Lücke, Paulicki, Birch-Hirschfeld, and Laveran are cited by Tedeschi[1] as having made similar observations. Tedeschi himself studied an instance of recurrent round-celled sarcoma of the thigh, during the growth of which there developed some 300 metastases, and he found in the clots in the heart-cavities numerous white particles consisting of tumor-cells; in this case the heart contained innumerable metastatic nodules, and he very properly regards the cell-masses in the blood as indicating the mode of dissemination.

In this case, then, the course of events may be outlined in this way:

1. Primary, small spindle-celled osteo-sarcoma of the tibia; recurrence in the stump after amputation through the knee-joint in January, 1892.

2. Dissemination into the pulmonary circulation before disarticulation at the hip, *i. e.*, some time before May 14, 1892.

3. Death from pulmonary and right intra-ventricular metastatic sarcoma, August 14, 1892.

4. The growth in the right ventricle came from direct implantation of sarcoma-cells upon the endocardium, and subsequent development in the direction of least resistance, *i. e.*, out into the cavity and between the muscular tabeculæ.

CASE III. *Primary round-celled sarcoma of the epicardium.*—An American Indian woman came into the Cook County Hospital moribund and died without a clinical record of any kind being obtained, except that she was fifty years old. She was quite well nourished. The post-mortem examination showed a fatty liver, pulmonary emphysema, and chronic nephritis. The following is a description of the heart: There is firm and complete pericardial obliteration; after carefully removing most of the parietal pericardium and cutting off the vessels near the base of the heart, a mass including a tumor which weighs altogether 448 grams remains. Situated upon the anterior surface of the heart is a tumor, shaped something like a cone, the base being the upper, and the apex the lower limit; the long diameter from base to apex is 8 cm., and the diameter of the base itself is 7 cm.; the interventricular septum passes under the center of the mass, which considerably overlaps the commencement of the pulmonary artery. This tumor appears to spring from the epicardium, and between the posterior surface and the myocardium proper is a layer of yellow fat, while the connection with the pulmonary artery is quite intimate. Externally the mass is covered by a thin layer of fibrous tissue—the epicardium—except posteriorly, where the capsule is continuous with the rest of the epicardium. The growth is quite firm and a little lobulated. Its cut surface is grayish-yellow, smooth, glistening, and homogeneous; large blood-spaces appear in the section. Internally the heart is quite normal, there are no endocardial changes, and the ventricular cavities and walls are not larger or thicker than normal.

There were no growths in any of the other organs examined, but unfortunately the investigation as to this point was not quite thorough enough, as it did not include the intestines and the brain, bones or joints.

Microscopic appearances. At the periphery of the mass is a quite thick layer of fibrillated connective tissue, in which are many large and irregular

[1] Loc. cit.

spaces, partly or wholly filled with blood. From this capsular layer of fibrous tissues, interlacing bands of varying width pass into the tumor proper, forming spaces of different sizes. The tumor is otherwise made up of round cells, reproducing quite typically the small round-celled sarcoma. The cells are, comparatively speaking, small, with large nuclei that stain deeply. In many places the tumor consists of diffuse areas of infiltrating round cells, separated by a faint and delicate intercellular network; in such districts, small, thin-walled blood-vessels containing blood occur occasionally. In other places again the spaces alluded to are filled closely or loosely with the round cells, and here the appearances are not at all unlike those seen in sections of certain carcinomas, but there is usually an intercellular network to be made out connected with the grosser bands of fibrous tissue. There is no pigment present. In conclusion it may be said that this tumor in part presents the structure of a small round-celled sarcoma, in part that of the so-called lympho-sarcoma.

This then is without much, if any, doubt a primary sarcoma of the epicardium of the anterior surface of the ventricles, and it is interesting not so much on account of its structure as on account of its very unusual point of origin, namely, the sub-epicardial areolar tissue.

In this case it is also exceedingly regrettable that a thorough physical examination could not be made, because it would have been very instructive to have a record of the physical signs presented on the part of the heart. Here again there is noted absence of hypertrophy and dilatation of the heart, although the weight of the tumor itself, as well as the pericardial adhesions, would seem to be ample causes of increased labor for the heart. The post-mortem examination did not disclose any satisfactory explanation of the absence of hypertrophy.

COLUMBUS MEMORIAL BUILDING.

CLINICAL LECTURE.

CARCINOMA OF THE UTERUS.

A Clinical Lecture delivered at the Philadelphia Hospital, October 7, 1893.

BY E. E MONTGOMERY, M.D.,
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GENTLEMEN: The case I bring before you this morning is a woman with the following history: She is fifty-two years of age, married, and the mother of seven children. Her mother died from some uterine disease after a year's sickness. She menstruated regularly, excepting as interrupted by gestation and lactation, until forty-five years of age, when she had an attack of typhoid fever and the menses never subsequently reappeared. She had had a profuse leukorrheal discharge for a number of years; had been treated at one time for uterine disease; and after the birth of her last child, some twelve years ago, she was operated upon for a lacerated cervix. In the last two years the discharge has been more profuse and has had quite an offensive odor. Eight months ago, after lifting some heavy weight, she had an attack of flowing, and since then she has had repeated attacks of hemorrhage. She entered the hospital a few weeks ago for treatment.

Taking such a history you will, I am sure, come to the conclusion that this patient is suffering from a grave constitutional condition. Introducing my finger into the vagina it comes in contact with nodular projections, more marked on the anterior wall, and as the finger passes up I find that the whole of the anterior wall of the vagina is involved, producing marked thickening, with irregular projections. This extends up to the uterus. The uterus itself and the upper part of the vagina are one mass of diseased tissue. I am unable to show you this, because the mere introduction of the speculum to separate the parts and expose the vaginal walls, would result in a great deal of pain to the patient, probably also in a profuse hemorrhage that would require tamponing to control it, so that the slight information a few of you would derive by such exposure would not justify the discomfort to her.

I have sent the patient out, for the reason that I do not wish to discuss before her the gravity of her symptoms. You will have noticed that her face was pale, anemic, and of a dirty-straw color. She has lost flesh and strength and suffers continuously. This is a case of unquestionable epithelioma of the uterus and vagina. In such a case, having reached the development it has in this patient, there is no condition with which it could be confounded. Consequently the diagnosis is rapidly made.

This class of cases is among those in which it is extremely important that an early diagnosis should have been secured, for if the disease is permitted to continue until it has reached the stage it has in this patient, there is but one inevitable termination. Our hands are practically tied, and we can accomplish nothing more than to palliate the more unpleasant symptoms. I cannot too strongly urge upon you the importance of careful examination in every case in which there is reason to suspect malignant disease; even under the best circumstances the disease is so insidious in its onset that it may have reached a serious stage before the patient comes under our observation. Then, too, the natural modesty of the patient compels her to neglect consulting the physician as long as she possibly can; and with the belief of many patients that they must undergo certain marked phenomena at this period of life, they wait, hoping that the unusual phenomena are but the premonitory symptoms of the climacteric period. It is to be regretted, but fortunately not so frequently as formerly, that many physicians console their patients at such times with this hope, and fail to subject them as they should to a careful examination, to determine the cause of the condition. Let me impress upon you the importance of making a careful examination, if necessary, at the price of your continued attendance upon the patient, for you cannot afford to go on in attendance upon a patient when you suspect the possibility of a grave disease and do not have the permission to make the necessary examination to determine its existence. It

is far more dignified and more to your credit to absolutely decline to continue in your attendance upon a patient who will not submit to necessary examination.

What symptoms should lead us to suspect that malignant disease is present in any individual case? The symptoms that are in every case most marked and that should arouse suspicion, are hemorrhage, pain, and offensive discharge. These symptoms are not present in every case, nor do they occur in regular order. Pain may be entirely absent during the entire progress of the disease, and in some cases only marked in the later stages. In some patients the first symptom will be a smart hemorrhage; in others a profuse watery discharge will exist for a length of time. Malignant disease is most likely to occur at or near the climacteric, so that age is to be considered in eliciting the history and in leading us to suspect such disease. It is well, however, to keep in mind the fact that it is not confined to any particular age, as I have seen cases of as serious disorder in women of but twenty years of age as in the patient whom I have just shown you. It is also more likely to occur in women who have borne children, as a result of the injuries to which the cervix is subjected during the progress of parturition. It may occur in women who have borne no children, or in the unmarried. In the latter, however, it is more likely to affect the mucous membrane of the body of the organ. The site of the disease is usually the cervix; in fact, it occurs in the body of the organ in only about 2 per cent. of the cases in which the uterus is involved. We can understand why the cervix should be the part affected, for the reason that it is the portion of the uterus that is most frequently subjected to injury during parturition, and in which the injury is likely to produce the greatest amount of subsequent irritation.

Generally the earliest symptom is an increase of bleeding during menstruation; or, a patient may suffer from slight discharges of blood, or from a leukorrheal discharge streaked with blood, during the menstrual intervals; or, a patient who has ceased to menstruate may after months, or even after years, be taken after a little exertion with a smart hemorrhage. This may subsequently recur at frequent intervals, and finally there may be a continuous bloody discharge. Another early symptom is the offensive discharge. This is thin and watery in character, having the odor of decomposing tissue. Pain may occur early in the disease, and is more likely to be present in those cases in which the cervix becomes extensively infiltrated, the infiltrate causing pressure upon the terminal nerves.

Pain, hemorrhage, and profuse discharge soon lead to emaciation and loss of strength. The means that are taken to allay the pain produce interference with general nutrition, causing the patient to rapidly break down. You must keep in mind the fact that the disease in its origin is a local one, and if we are enabled to remove it before the constitutional symptoms have developed, or before the disease has passed beyond its original site, we may feel hopeful of securing a radical cure. The progress of the disease, however, is so insidious, and it is so difficult to determine when the disease-agency has been carried from the source of origin, that it is not wise in the individual case to promise certain relief. In some cases in which the disease is extensive in character, you will find that an operation results in cure, while in others with apparently but slight involvement there will be a recurrence. The occurrence of any of the symptoms mentioned, or of hemorrhage in any patient, should be an indication for most thorough physical examination.

You will ask: Is there any condition that may be mistaken for carcinoma, or with which the latter may be confounded? By physical examination we usually find that the disease has begun on one or the other lip, or near the canal of the cervix; that it has resulted in hypertrophy of the papillary layer, cellular infiltration, and the development of tissue that is extremely friable, that breaks easily under the touch, with consequent hemorrhage. When the disease has existed for a length of time, this tissue may break down, leaving an ulcerated or excavated cavity covered with a foul, disagreeable discharge, from which hemorrhage is likely to result. In other cases we may find marked hypertrophy of the tissue and the formation of cauliflower growths, which are very friable and break down under the touch, causing profuse bleeding. In the majority of these cases we must make our examination by the touch. When the uterus is extensively diseased, the introduction of the speculum is likely to result in bleeding. In the early stages of the disease, if we are in doubt as to the condition, the diagnosis may be confirmed by removing a section of the tissues and subjecting it to microscopic examination. In a case in which hemorrhage occurs, if it is found that the cervix appears healthy, but that the bleeding still continues, the uterus should be carefully dilated and its cavity explored, with the finger if necessary, to determine the cause of bleeding.

Thus we recognize that hemorrhage may result from a variety of conditions, and that it is not always necessarily an indication of the existence of malignant disease. Thus, it may take place from a hemorrhagic endometritis, from interference with the circulation, as in the uterus, from disease of the ovaries or pelvic exudation, the presence of ectopic gestation, or growths within the walls of the uterus itself. Thus a woman suffering from a fibroid growth may have the circulation interfered with to such a degree as to lead to partial sloughing, to ulceration of the mucous membrane, to sloughing of the superficial tissue, or to necrosis of the entire mass. In such cases we would necessarily have profuse offensive discharge. We shall have the patient suffering from symptoms of septic absorption. The dilatation of the cervix to permit the introduction of the finger will readily disclose the character of the condition. Sloughing fibroids will still be of sufficient resistance and tenacity to prevent breaking down under the finger, while in carcinoma or epithelioma of the uterus the surface will be infiltrated, giving the sensation of possible sloughing, the friable mass resting upon a firm, indurated base.

Having had our suspicions of malignant disease confirmed by examination, it now becomes a question of what shall be done in order to afford the patient immunity against its return. A variety of operative procedures have been suggested, some amputating the cervix by either the knife or the scissors, or by the galvano-cautery, as has been recommended by Byrne, of Brooklyn. Another operation is that devised and recommended by Baker, of Boston, which consists of high amputation of the cervix, amputating it flush with the

attachments of the vagina anteriorly. These operations, however, will remove only a portion of the cervix. We must remember that the disease extends continuously and contiguously. If the smallest portion of the tissue is left in which malignant cells have wandered, there will be a return of the disease, and the outlook is consequently bad. For this reason it has been my habit to urge that in every case in which the disease is confined to the uterus the operation shall be extirpation of that organ. I believe that this is as thoroughly indicated in carcinoma of the uterus as would be the removal of every vestige of the mammary gland if one lobe was involved in malignant disease. In studying the indications for any operation we have to consider it from different standpoints: First, with reference to the influences upon the patient, and to the unmolested continuation of the disease, and, secondly, as to the mortality of the operative procedure proposed.

As to the patient, we have in this condition a disease in which the outlook for the patient is bad. We have as yet been able to obtain no remedies that have any marked influence upon the progress of the disease; consequently constitutional measures are ineffective. The patient is absolutely doomed unless a radical operation can save her. Even this would not justify the performance of an operation of a grave character, one in which the chances for the return of the patient to health are meager. Removal of the uterus has not proved a very dangerous procedure. It has been my good fortune to operate in twenty-one cases with but a single death, and a mortality so slight as this does not indicate that the operation is an exceedingly dangerous one. The indications for the operation may then be considered to be, first, the existence of malignant disease in any portion of the uterus, however slight, providing the uterus be still movable; second, the mere existence of fixation of the uterus need not necessarily be considered a contra-indication to operation, as this fixation may be due to inflammatory rather than to malignant infiltration, and the malignant disease may be secondary to the inflammatory condition; indeed, the implantation may be upon a soil better fitted for its development by the previous inflammatory disease. We may be able to determine by careful examination whether the fixation is due to inflammatory exudate or to malignant infiltrate. This is accomplished by making a rectal examination, which should be a part of the routine in every first examination. Examining through the rectum, we may find that although the disease is extensive in character, the mucous membrane is movable from the mass of exudate. In malignant disease, however, it will be found that the mucous membrane is not movable, but is fixed. The tissue infiltrates it, giving rise to a hard, rigid surface. Then, too, in the case of infiltration, it will be found that the surfaces are uneven, not smooth and regular in outline, as will be the case with exudation.

When we come to the consideration of the operation itself, we have a variety of methods of procedure, some operators preferring, in removal of the uterus, that the broad ligaments shall be ligated in sections, others advocating ligation *en masse*, and some advocate stitching the peritoneum to the vaginal wall as the operation proceeds. Others stitch the peritoneal surfaces together, others the peritoneal surface and the vaginal surface separately; some use drainage, others none; some preferring drainage by means of tubes, others by gauze. By some the broad ligament is ligated, and each section cut off, allowing the last portion to be drawn further down; some, instead of drawing the uterus straight down, invert the fundus forward; others invert it backward; then tying off the uterine and ovarian arteries on either side, the uterus is cut away. In all the operations that I have performed I have preferred to use the clamp.

The method of procedure is as follows: First, the patient is thoroughly prepared for the operation by frequent vaginal irrigations; from several days to a week before the operation the uterus itself, with as much diseased tissue as possible, is carefully curetted, the diseased prolongations cut away, the vagina cleaned and packed with iodoform-gauze. This may be repeated at intervals of two days for a week before the operation is attempted. In beginning the operation the cervix is seized with a pair of strong volsella forceps, and for this purpose I prefer those instruments having four prongs to the blade. They are much better than the two-pronged instruments, because, in having a firm instrument like this, it is certain to seize some healthy tissue and will consequently promote this being drawn down. The cervix is then encircled by a knife, and the vaginal mucous membrane cut through as far away from the surface of the disease as the position of the bladder and orifice of the urethra will permit. Having cut through the mucous membrane, we then dissect up with the fingers, pushing the bladder until we reach the peritoneum posteriorly. We also push the tissues off until the peritoneum is reached, when the latter is grasped with hemostats and incised, the opening torn larger, and a sponge with a string attached is passed through it into the peritoneal cavity, to hold up the intestines and also to prevent them from being soiled by the bladder discharge. The peritoneum is then opened anteriorly, the uterus now remaining attached by the broad ligament on either side. With a pair of modified Greig-Smith clamps one blade is placed behind the broad ligament and the other in front, the clamps screwed down until the tissues are firmly held and are crushed in the grasp of the clamp. With the clamp applied upon one side the uterus is then cut off, leaving the clamp in place. This permits the uterus to be dragged down and delivered. The large second clamp can be applied with much less difficulty outside. Having clamped the second broad ligament, the uterus is cut away and the clamp is then replaced in the vagina, projecting into the abdominal cavity. The parts are irrigated with hot water, dried with sponges, the abdominal sponge is removed, and a piece of iodoform-gauze is carried over the end of each clamp to keep the intestines away from it, and also to prevent them from coming in contact with the denuded surfaces, which would result in improper union and in subsequent contraction, or possible obstruction of the intestine. This method of procedure has the advantage that it is expeditiously carried out; that there is no danger of the ligature slipping and hemorrhage taking place; that free drainage is afforded, and the clamps may be removed at the end of twenty-four hours without fear of hemorrhage. The drainage is free in such patients, convalescence is usually undisturbed, and if antiseptic or aseptic precautions have been observed the recovery is usually uninterrupted. In the patient we had before you to-day,

however, no such plan of treatment can be exercised. By no operative procedure can we hope to remove the entire disease. To accomplish its complete removal would necessitate the removal of the septum between the vagina and the bladder, and the removal also of the posterior wall, so that it is not worth while attempting a dangerous operation which can by no means be a radical one.

CLINICAL MEMORANDUM.

A CASE OF DEPRESSED FRACTURE OF THE SKULL IN A CHILD, WITH AN ENORMOUS CLOT; OPERATION; RECOVERY.

BY WM. N. JOHNSON, M.D.,
OF GERMANTOWN, PA.

SALLIE R., eleven years of age, was admitted to the Germantown Hospital on Saturday, July 29, 1893. Two days previously she had fallen from an apple-tree a distance of fifteen feet, and struck directly on her head, and immediately became unconscious. How long this primary unconsciousness continued is not definitely known, for after a time she recovered sufficiently to walk to her house, about five hundred yards distant. While there, she again became unconscious, and a physician was summoned, who did not recognize her true condition until Saturday morning, when he advised removal to the hospital. Upon admission, the following condition was present: The temperature was 97°, the pulse 135, the respiration 26. There was total unconsciousness, even to absence of the conjunctival reflex. Ptosis of the right eyelid was present, and the right pupil was widely dilated and insensible to light. The left pupil was normal. Urine and feces were passed involuntarily. I am unable to state whether there was hemiplegia or not, as owing to the precarious condition of the patient, examination in this direction was not pushed.

When the child's head was shaved, a large depression over the right side, between the frontal and parietal eminences, could be made out, although no external wound was visible.

No anesthetic being required, and with antiseptic precautions, an incision about three inches in length was made over the central portion of the depression, and a large stellate fracture, involving the lower border of the parietal bone, and the adjacent portion of the temporal bone, was revealed. With a thumb-gouge, an opening large enough to admit one blade of the rongeur forceps was made, and with this latter instrument three square inches of bone were removed, disclosing a large clot between the dura and the bone. This clot was so extensive, being fully the size of a seven months' placenta, that it was necessary to remove it piecemeal, and in order to do this, a considerably larger quantity of bone had to be chiselled away. When the clot had been entirely extracted, the space left was large enough to allow the hand to sweep downward as far as the orbital plate of the frontal bone, and upward to the longitudinal sinus. The brain-substance did not expand after the pressure was removed, and there was considerable capillary oozing from all that portion of the dura underneath the clot. To control this the cavity was thoroughly washed out with a hot solution of boric acid (gr. x : ℥j) and afterward filled with a 25 per cent. solution of boroglycerid, which was allowed to remain.

At this time the patient's condition seemed hopeless, the pulse being 178 and the heart-sounds barely perceptible. Two large drainage-tubes were introduced into the wound; the scalp was rapidly approximated by means of four or five silk sutures, a large antiseptic dressing applied, and the girl was put to bed, surrounded with hot-water bottles, and a hypodermatic injection of strychnin, gr. $\frac{1}{30}$, administered.

At 3.30 P.M., half an hour after the completion of the operation, the pulse was 130, the respiration 34, and the temperature 101.4°. One hour later the girl opened her eyes, recognized her father, and complained of pain. At midnight she was perfectly conscious, and passed her discharges voluntarily. She was given calomel in one-tenth-grain doses every half-hour, and strychnin sulfate hypodermatically, gr. $\frac{1}{30}$, every third hour, with milk-diet, and whiskey in moderate quantities.

The following day she complained of "seeing everything double." The right pupil was still widely dilated, but responded slightly to light. Ptosis of the right lid continued. At the end of the second week diplopia had disappeared, and the ptosis was markedly improved, although the dilatation of the pupil still continued.

The greater portion of the wound healed by granulation. The temperature never exceeded 101.4°, and this was immediately after operation, and the pulse dropped from its highest point—178, during the operation—to 81, on the third day, and remained there.

Then followed an excellent and uninterrupted recovery, and the child was discharged cured on September 9th, six weeks after operation. On September 15th there was still a slight dilatation of the right pupil. The wound was entirely healed, with the exception of one small sinus, and considerable regeneration of bone had taken place. On October 30th the wound had entirely healed, pulsation of the brain being distinctly visible over the scalp. There are no symptoms at present, except possibly a little slowness of mental activity.

5346 MAIN STREET.

MEDICAL PROGRESS.

Transient Bilateral Amaurosis following Concussion.—SEALY (*British Medical Journal*, No. 1711, p. 843) has reported the case of a boy who, while working in a coal-pit, was struck on the back of the head by a lump of coal and was insensible for about ten minutes. On regaining consciousness he noticed that vision was poor in the left eye and a half-hour later the eye was completely blind. When seen, some two hours after the accident, vision was also lost in the right eye, although light-perception remained. The eyes appeared normal and the pupils reacted to stimulation. No fracture of the skull could be detected. A purgative was ordered and it was directed that the boy be put to bed. Several hours later, the right eye, like the left, had become completely blind. Small doses of potassium iodid were prescribed. On the following day the condition was unchanged, but on the next day light-perception had returned to the left eye. A day later objects became distinguishable to the left eye, and the right was capable of recognizing light. On the fourth day vision was per-

fect in the left eye and almost so in the right. On the sixth day the boy was in quite as good a condition as he had been before the accident, and so continued.

Anuria from Compression of the Ureters by a Uterine Fibroid Relieved by Operation.—TUFFIER (*La Semaine Médicale*, 1893, No. 59, p. 468) has reported the case of a woman, forty-eight years old, who came under observation on account of retention of urine of three days' standing, together with a history of having had a subperitoneal uterine fibroid removed two years previously. There was also constipation. The introduction of a catheter showed the bladder to be empty. Vaginal examination disclosed the presence of a tumor wedged in the pelvis and obviously compressing the ureters and the intestines. In view of the gravity of the situation and of all of the circumstances, abdominal hysterectomy was undertaken and successfully carried out. Urine began to flow on the following day, and by the fifth day the state of the urinary secretion had become normal. Barring the temporary persistence of a small fistula the post-operative course of the case was uncomplicated.

Spontaneous Rupture of the Heart.—DEANE (*Australian Medical Journal*, No. 9, vol. xv, p. 471) has reported the case of a woman, seventy years old, who, in ordinary health on retiring at night, was found dead in bed in the morning. She had had an attack of influenza more than a year previously, and had never afterward felt well. For some time there had been attacks of faintness on slight exertion. Upon post-mortem examination the left pleura was found filled with serum and presenting extensive adhesions. The base of the left lung was congested. The pericardium contained a large clot, on removal of which a ragged rent was found at the apex of the left ventricle, large enough to admit the tip of the little finger. The muscular structure of the entire heart was of a putty-like color and exceedingly friable. The valves were normal. Around the rent and extending for a distance of one inch from it, there was a tumefied, dark-red infiltration of the muscular tissue.

A Hitherto Undescribed Symptom of Complete Facial Palsy.—At a recent meeting of the Ophthalmologic Society of Heidelberg, GOLDZIEHER (*Centralbl. f. Nervenheilk. u. Psychiatrie*, October, 1893, p. 478) expressed the opinion that the teaching that the trigeminus is the secretory nerve of the lacrymal gland is not to be depended upon, as this function belongs to the facial nerve. The fibers that transmit the necessary impulses enter the spheno-palatine ganglion with the nervus petrosus superficialis and pass hence in the temporo malar nerve. In case of a lesion seated in the bony canal and at the level of the geniculate ganglion, and attended with complete palsy of the seventh nerve, including the veil of the palate, there follows a suppression of the lacrymal secretion and a cessation of the reflex flow of tears.

Angina due to Oidium Albicans.—BRANDENBURG (*Corr.-bl. f. Schw. Aerzte*, 1893, No. 20, p. 709) has succeeded in demonstrating the presence of oïdium albicans in the whitish deposits in two cases of angina in adults. Both cases presented mild fever and dysphagia, as well as gastric derangement. The small punctate deposits presented on microscopic examination a large number of bright spores and long mycelial threads. In one case the morbid process remained confined to the vault of the palate and the uvula; in the other the deposits extended to the gums. The covering of the tongue and the lining of the cheek escaped. Therapeutically, potassium chlorate was employed as a gargle, and topical applications of dilute tincture of iodin were made.

THERAPEUTIC NOTES.

For Parenchymatous Metritis.—CHERON (*Medical Press and Circular*, No. 2840, p. 375) recommends the following line of treatment: The nourishment should consist of two quarts of milk in small quantities, frequently repeated. For the relief of pain and the reduction of temperature five grains of phenacetin may be given every six hours, and hot antiseptic fomentations applied to the abdomen as follows: A large layer of cotton is plunged into hot water, wrung out, sprinkled with from forty to fifty drops of tincture of opium, placed upon the abdomen and covered with a layer of oiled silk. This application is to be frequently renewed night and day. The following ointment is rubbed into the lumbar region:

℞.—Salicylic acid	ʒj.
Lanolin	ʒj.
Essence of peppermint . . .	♏iv.
Lard	ʒjss.—M.

As soon as the patient can bear it, a hip-bath of warm starch-water is given twice a day, and also a vaginal injection of a 3 per cent. solution of boric acid. Subsequently antiseptic vaginal suppositories are used to complete the cure.

Spleen-feeding in the Treatment of Lymphadenoma.—BLOMFIELD (*British Medical Journal*, No. 1712, p. 889) has reported the case of a boy, twelve years old, with lymphadenoma, in which during the last month of life a spleen, grilled slightly, over which fresh marrow was melted in lieu of butter, was daily administered with the food. The general feelings were much improved, the chief difficulty being to find a comfortable position, in consequence of the great size of the spleen and the lateral displacement of the head from the mass of glands in the neck. The spleens were generally those of sheep, and were obtained as freshly as possible. It is not suggested that life was prolonged in consequence of the treatment, but it is believed that the general condition was ameliorated and death made easier.

For Psoriasis.—JAMES (*British Medical Journal*, No. 1712, p. 889) recommends the employment of a solution of chrysarobin in chloroform (1 to 7), to which a suitable amount of oleum deelinæ (an equal amount or less) is added, the whole being stirred with a hog's-bristle shaving-brush. With this mixture the diseased area is well scrubbed.

For Undue Sweating.—OLSZEWSKI (*Centrabl. f. d. ges. Ther.*, ix; *Corr.-bl. f. Schw. Aerzte*, No. 20) recommends fluid extract of hydrastis canadensis. In mild cases a single dose of from 20 to 30 drops at night suffices; in more aggravated, from 25 to 30 drops, three times a day, for several successive days will be required.

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SATURDAY, NOVEMBER 18, 1893.

FOOT-BALL.

To one who is not bereft of reason and moderation by the "rush-line" of a popular craze or fad, it is simply astonishing to witness the excesses permitted—nay, encouraged—in the name of athletics and education, by the foot-ball enthusiasts.

Note, first, the clear trend of the whole affair toward professionalism, including betting and gambling. It is simply absurd to longer shut one's eyes to this fact. Pseudo-educators and wild enthusiasts may deny or seek to ignore it, but it is fast becoming an open secret that men are making a livelihood by the game, that sometimes their expenses in college are paid for the purpose of winning match-games and that betting on the results of the matches is growing more and more common. Now, a frank, out-and-out professionalism in athletics is not so bad a thing, if the game be truly an athletic and hygienic one, and not brutalizing to mind or body. But one who to any small extent is aware of the way collegiate politics are becoming bound up with semi-professional foot-ball politics must deplore the malevolent influence of the game upon modern educational tendencies.

And, in the name of education—what a farce! Can any sane man deny that in founding, endowing, and encouraging institutions of learning, the object is to fit men for the intellectual battles of life? Can he deny that the training and development of the muscular system, desirable as it is or may be—and there is only one thing that is more desirable—should be subordinated, as a feeder and supporter to mental athletics? Finally, can it for a moment be denied that the student who is a foot-ball enthusiast, whether player or "howler," is nowadays giving a disproportionate amount of his time and interest to the game rather than to his studies? Does the collegiate foot-ballist desire rather to stand at the head of his class, school, or country, as the best-educated man, or to win the applause of 20,000 spectators, and to have his hideous picture and his biography spread before the readers of every daily paper as one of the winning team in a match-game?

What do professors and educators mean who encourage such a tendency? It is either an undignified renunciation of their proper office and function in favor of the professor of athletics and physical training (would it were even so good a thing as that!), or it is a concession to a low type of collegiate politics, and to an irrational fashionable fad.

Do they not suspect that they are raising a ghost that they cannot "lay" again? Wise educators are to-day frightened at the influence of the foot-ball problem, and are seeking earnestly to check the fatal tendency to rowdyishness and coarseness following necessarily and closely upon such practices and abuses of the game-instinct.

We are well aware of the favorable statistics the enthusiasts offer as to the influence of athletics on education. There are two fallacies in them: 1. Foot-ball is not athletics, and the influence of this game will soon reduce the good average as shown by and due to athletics proper. 2. The statistics are gathered and offered by the enthusiasts of the game.

In the name of universal and of university gymnastics—what a farce! Instead of carefully training each and every student physiologically and systematically, so that his bodily defects shall be corrected, and so that his body shall be a supple, strong, and beautiful servant of the mind, there is a concentration of all training upon one man out of a hundred, for a special and not by any means beautiful purpose. Ninety-nine let one do their exercising (excepting the vocal part!) for them, and we have the noteworthy result—vicarious athletics, or gymnastics by proxy. Athletics by proxy can only be compared to religion by proxy—the plan of some religious sects that hire a few professionals to do

their worship for them—they, the passive audience, watching the performance. The aim of educators, so far as it relates to athletics, should be to give every student a rounded harmonious physical organization, not to train a dozen or two dozen semi-professionals (sometimes wholly professional except in name), hired, bribed, or wheedled to attend the institution, to be a show-team, and win matches in order to attract students to the institution. The college that has not a splendid gymnasium, large enough for every one of its students and a compulsory system of physical training for each has little just claim upon parents or the public. The wise father, other things being equal, will send his son to the college that has the best general gymnasium and the poorest record in winning public athletic games.

In the name of esthetics—what a farce! What a remarkable spectacle is that of a quilted, bepadded, dishevelled, long-haired, begrimed, scarred foot-ball hero who finds glory in a savage's scrimmage in the mud! A sane and healthy enthusiasm and love for athletic excellence must have some artistic touch to it. How would the hero of the games of classic Greece at the height of that nation's splendid athletic development compare with our bruised and dirty hero of the foot-ball field?

In the name of hygiene, physical and mental—what a farce! Last week near New York, a young man's neck was broken on the foot-ball field. The enthusiast sneers when the game is called brutal, but in sober earnest is prize fighting less brutal? Doubtless foot-ball has killed more persons than fisticuffs. The papers teem with accounts of the physical injuries of the players after every game. These young men are getting to be proud of their injuries, their sprains, their battered faces, and wrenched limbs. Is this not topsy-turvy? Is this gymnastics? If so, it is inverted gymnastics—on its head in the mud! We laugh at the outrageously perverted pride of the German student who exhibits his chopped and mangled face as a proof of glory instead of shame—and we are going the same road. Wise fathers are beginning to refuse their sons permission to play a game that relies for its charm upon a distinct reversion to a barbaric type of sport, in which savagery, danger, and the lowest kind of physical prowess are the alluring elements.

In the name of example to the young—what a farce! A game must be translated into the vernacular of the street-urchin to illustrate clearly its possibility for evil. The beautiful games of cricket and base-ball have, on the whole, been a blessing to the country; they are not brutal; they have large elements of skill and intellectuality in them; they encourage suppleness and all-round development of the body, of the senses, and of the mind. A "scrub-game" by suburban boys, or even by street gamins, does not make the players worse than they naturally are, does not arouse all the fierce and brutal passions of the savage nature, none too easily held in control even by the best. But compare this with a foot-ball game by the same half-civilized or quarter-civilized little savages, and one sees quickly the influence for evil of apparently so simple and small a thing as a game. If, governed by rigid rules and umpires, the presence of a vast refined audience and the possession by the players of good home-training, education, and all that, the game results in charges and the facts of "slugging," and in passionate enmities and rivalries, what then is to be expected from its translation into the conditions of the alley, the vacant-lot of the city-outskirts, and "played" by the most unregenerate types of human nature? Imitation is flattery—usually—but in this instance the flattery is nauseating even to the flattered.

It is a cause of deep regret that we should approach the ideal of Rome in our national sports, rather than that of Greece, and it is especially significant when educators and universities show this tendency. One would not expect them to encourage gladiatorial rather than intellectual and truly athletic contests.

Have we not more patriotism and originality than to accept this worn-out brutal old game second-hand from England? Have we not enough intellect to put some true "play," some ingenuity, and spontaneity into our national sport? Have we not enough mind to introduce something into play except "a secret code of signs," "undergraduate rules," and a coarse scrimmage of a dozen bleeding, bunched, and scuffling fellows sprawling in the mud?

If not in the name of general education, then in the name of medical education; if not in the name of morality, then in the name of medicine; if not in the name of esthetics, then in the name of physiology; if not in the name of social progress, then in the name of hygienic progress—it is time that we should command, Halt! The game is un-American and absolutely opposed to the spirit of true education, whether of the mind or of the body.

MUSCULAR DEVELOPMENT AND USE THE CONDITIONS OF HEALTH.

IT was, we believe, a saying of PASCAL that the evils that afflict mankind arise from our inability to sit still in a room—meaning thereby that in useless and ill-considered action is to be found the origin of much tribulation, and that calmly thinking out the best methods of action in advance would obviate it. But the modern physician and hygienist must often feel like reversing PASCAL'S *mot*, and saying that the evils that afflict mankind—or more truly, womankind (the same thing, however!)—come mainly from sitting still in a room. We mean by this that the great and the increasing prevalence of sedentary and indoor occupations inflicted on human bodies is already ripening a wretched source of physical (and hence psychic and moral) suffering. If there is any truth at all in evolution it is that animal and human life and progress have always been conditioned upon the exercise of the muscular system, that function precedes and begets structure, and that disuse leads to atrophy and death.

The disuse of the muscular system that is a result of civilization is the prolific source of much of the disease of modern life and an illustration of the biologic law. All the discoveries of modern medicine and science, every bacteriologic truth, every known etiology of disease, simply confirms the truth that, together with cleanliness, muscular health and development are the necessary conditions of freedom from disease, and that there is no health of the muscles without use of the muscles. The bacillus of tuberculosis has no power of harm to a person with proper thoracic and pulmonary expansion and development. All "consumption cures" except this one are useless, and this with some exceptions is effective in prophylaxis or cure. There is hardly a disease that does not equally well illustrate this truth.

What is civilization doing with this law? It is crowding people into huge cities, where every means of artifical locomotion, every labor-saving apparatus, and every necessity of business are all working to the same end of inactive muscles. From the weak, half-atrophied muscles naturally follow the defective digestion and assimilation of food, and the overwrought hyperesthetic morbid nervous system, ever vainly seeking to undo and to right the evils of denutrition, hyper-nutrition, and muscular inactivity. Our food is pre-masticated and we are becoming edentulous, and from the advertisements of predigested foods it would appear that we shall soon have no need of a private stomach, liver, or pancreas, because we can and should buy these products from the slaughter-house and laboratory, and thus save personal wear and tear. It is in the line of the much expounded physiologic division of labor. But that line logically and inevitably ends in the condition of some slave-holding ants that cannot move, and unless fed by their slaves die of starvation even when food is before them. Of course, we already have analogues of these little organisms in the increasing horde of urban hysterics, neurasthenics, roués, and tramps of various sorts, both aristocratic and ragged.

And lastly, comes the sham-science that would supply the want of healthy vital powers of all kinds, cerebral, muscular, testicular, and what-not, burned out by abuse or atrophied by disuse, by means of squirting into the veins or under the skin some of the supposed vital, but really dead and inert, juices of animals.

And even our frantic attempts to remedy the evil of muscular inactivity, with its spawn of varied disease, are themselves morbid, and sometimes serve to increase the evil. This fact becomes plain in our rage for athletics by proxy, and in the steady trend of athletic games toward professionalism and newspaper notoriety, sensationalism, to the encouragement of betting, and to the more brutal sorts of arena combats.

So far as cities are concerned, one of the most crying of evils is over pressure of school-children. Every physician has daily before his eyes the sad results, and he knows that instead of medicine the poor little body needs play and exercise, and out-of-door air and sunshine. All of the book-cramming that can be jammed into them will never compensate for the pallor, the pipe-stem legs, the narrow chests, and the stunted or abnormal growth.

The city child needs what it cannot have, country life. Failing in this it should be supplied with abundant, healthful gymnasium exercise, under the careful eye of expert and discriminating teachers of hygiene and physiologic development.

All of this is doubly true as regards girls and women. Fashion and house-incarceration and wealth are reducing our women to sad specimens of bodily and muscular ill-health, flabbiness, and undevelopment. Either publicly, or in private to parents, every physician can point out the truth,

and by his advice may help to avert the crop of coming disease or, in some degree, to cure the pathetic instances that fall under his care.

TOLERANCE TO SUPPRESSION OF VITAL FUNCTIONS AND RETENTION OF NOXIOUS EXCRETIONS.

NOT less remarkable than the idiosyncratic susceptibility of some persons to external influences is the tolerance of other persons to influences of the same class. We view with curiosity the individual who is excited by ordinary medicinal doses of opium or morphin, the other who is rendered vertiginous by the taking of a hundredth of a grain or less of nitroglycerin, the third who develops symptoms of coryza after the ingestion of almost inert amounts of potassium iodid, and so on; but not less curious are the instances in which massive doses of opium or morphin are well borne, as much as five grains of nitroglycerin are taken at a dose with advantage, and an ounce of potassium iodid is ingested daily without discomfort. Not less remarkable than these instances of tolerance to drugs are those cases in which life may be continued for long period after the suppression of certain functions or the retention of the products of these functions, the performance and the elimination of which, respectively, are thought essential to the continuance of life. For instance, constipation for a week is common, while constipation for a month at a time is far from unknown. Again, in some cases of jaundice, due to obstructive disease of the gall-ducts, bile does not enter the intestine for months, and even years.

Recently (THE MEDICAL NEWS, August 12, 1893, p. 176), we recorded a case of gout and renal colic in which there was total suppression of urine for eleven days. CABOT (*Boston Medical and Surgical Journal*, vol. cxxix, No. 9, p. 213) reports a similar case, in which the suppression continued for almost eight days. The case was that of a man, aged sixty, who, during a period of seven years, had had a number of attacks of renal colic upon one or the other side, and who, on several occasions, had passed renal calculi. In the attack in question, after the continuance of intermittent pain in either loin for about a month, there was a cessation of the flow of urine, and for nearly eight days none was passed, only a dram of turbid fluid being obtained by catheterization on the third day. During most of the time there were no special symptoms. On palpation a little more resistance was appreciated in the right loin than in the left, and there was slight tenderness. The prostate was of moderate size, but no tenderness or hardness could be detected above it. As the evidence indicated that the function of the kidneys had been interfered with by some mechanical obstruction, probably a stone, a median incision was made into the abdomen, between the umbilicus and the pubes. The right kidney was found to be irregular and lobulated, and enlarged to perhaps three times the normal size. Careful palpation of the ureter was difficult on account of the abundance of retroperitoneal fat, but nothing suggestive of a stone could be detected in the pelvis or ureter. The left kidney was of normal size, and its pelvis was not distended with fluid. Its ureter was traced with great care from kidney to bladder, but no stone could be detected. The bladder was contracted in the pelvis. To facilitate careful palpation of the left kidney an additional incision was made in the loin, but no stone was found. Further interference was now abandoned, the median wound being closed, the lumbar wound drained and only partly closed. The patient reacted well, and three hours after the operation there was a slight escape of urine from the urethra, and on passing a catheter thirty-seven ounces of light-colored urine were evacuated. The discharge continued, so that, partly by natural efforts and partly by catheter, two gallons of urine were obtained in the first twenty-four hours. In the second twenty-four hours five quarts were passed, the amount gradually diminishing until a daily excretion of seventy ounces was reached. Convalescence was satisfactory, and about a fortnight after the operation the bladder was washed out with a litholapaxy-pump, a few grains of calcareous matter being brought away. Some time later another attack of colic occurred, from which relief was afforded by massage in the course of the left ureter, and a calculus was passed a week afterward. It is believed that the function of the left kidney was suppressed by an inhibitory influence due to the irritation of a calculus in the left ureter, and not wholly as a result of the presence of the obstruction, while the function of the right kidney was entirely lost.

From the experience gained in this case, and from a study of the literature, the conclusion is reached (1) that in a calculous patient, or in a patient with a distinct attack of renal colic, suppression of urine should be regarded as directly due to

the obstruction. In the majority of cases both kidneys will be found to be disabled. (2) Such a case should be treated by operation as soon as it is evident that the function of the kidneys has come to a standstill, as there is little chance of the stone being pushed along the ureter when the kidney is no longer secreting urine behind it. (3) In the absence of evidence as to the location of the stone, the first step in such an operation should be median celiotomy, with the hope of discovering the whereabouts of the calculus, in order to proceed intelligently for its removal. (4) If by this examination no calculus can be found, steady massage of the pelves of the kidneys and of the ureters, from above downward, should be practised, in the hope of dislodging or breaking up a small calculus if present.

EDITORIAL COMMENTS.

The Annual Report of the Supervising Surgeon-General of the Marine-Hospital Service of the United States for the fiscal year 1892, issued by the Treasury Department, emanates from the chief officer of a very important but too little known branch of the public service. Perhaps very few persons, even among those generally well-informed, are aware of this great system of medical relief for sick or injured seamen, which had its origin nearly one hundred years ago.

In 1798 Congress imposed a monthly tax of twenty cents upon every seaman's wages, to go toward a relief fund for those in need of medical or surgical treatment. These collections, in 1802, were constituted a general fund, and provision was made for like care for foreign sailors at the rate of seventy-five cents per day. In 1811 the moneys raised from the navy were made a separate fund for the benefit of that branch of the service. A reorganization took place in 1870, and the business was placed in charge of a supervising surgeon-general; the hospital-tax on each seaman's wages was also increased to forty cents per month. Besides the revenue derived from this tax, appropriations have from time to time been made by Congress for the maintenance of the work.

Without going into detail, it may be stated that the care of the seamen is provided for by contract with general hospitals or with private parties, except where the Government has established its own hospitals through this bureau. Of these latter there appear to be at present nineteen.

Besides this prime object of its existence, aid is extended by this department to other branches of the Government service: to the life-saving service on the seacoast and on the great lakes; to the inspection service of steamboats, and to the revenue-marine service, as well as in examination of immigrants. Another very important matter, as to which interesting details are given in the report, is that of national quarantine. This subject occupies forty-nine pages, and is well illustrated.

Some idea of the magnitude of the work of the department may be obtained from the fact that at the commencement of the fiscal year there was a balance available of $75,528.01, and that the receipts from all sources were $650,510.39; the expenditures were $586,-839.06; leaving a balance at the close of the year of $139,199.34.

One hundred and nineteen pages of the report are filled with histories of fatal cases, with necropsies; many of them are of little or no scientific value, and all are simply buried. Following these there are sixty pages of tabulated statistics, of which the same may be said. We think it would have been better had the medical officers given their observations to the profession through the usual channels, and the Government issued a merely business document setting forth the workings of the office.

The Aims and Incompetencies of Opticians.—Every optician in the United States (except perhaps as many as can be counted by the fingers of one hand) is cocksure of his ability to prescribe for ametropia as well as any physician. Not only this, but the opticians (with but few exceptions) attempt to do so whenever opportunity presents. Further, their single trade-journal is encouraging this delusion, and enthusiastically urges the establishment of optic schools wherein the non-medical optician shall learn to relieve the medical profession of all care of the eyes, except as to diseases and surgery. As the treatment of ametropia and heterophoria constitutes about nine-tenths of the oculist's work, this has bearings worthy of consideration. As absolutely every pair of spectacles worn has a medical, and possibly a most *serious* medical significance to the wearer, and as (with few exceptions) no non-medical optician ever prescribed a proper pair of lenses (the writer has in thousands never seen a single instance), the fact becomes quite significant. It is exactly as if the truss-makers and instrument-makers should combine to take out of the hands of the surgeons all cases of hernia and spinal disease, and should urge that to them should be left the decision as to whether a case of rupture or of Pott's disease needed a surgeon or not. Just as every case of spinal curvature needs the surgeon's attention, so does every case of ametropia or heterophoria, and it is downright and criminal quackery to permit the present method. If the opticians only knew how to do their own proper work their pretensions would be less exasperating, but (with few exceptions) one cannot find, from any American optician, a spectacle bridge and frame sufficiently rigid and heavy to do its medical work; never a temple-piece or ear-curve having the remotest likeness to the shape of the back of the human ear; never an adjustment such as corresponds to the wearer's peculiarity of face and labor. Of the spectacles worn by the American people (and Heaven knows our opticians are better than those of foreigners) $\frac{999}{1000}$ show about the same mechanical and artistic skill and intelligence that is shown by a five-year old school-boy's first slate-picture of "a horse."

Society Transactions and Libraries.—Having occasion recently to look up a certain subject on which we hoped to obtain information from the Transactions of one of the medical societies of America, we were surprised to learn

not only that the volume desired was not in the great collection of the Library of the College of Physicians of Philadelphia, but that with a few exceptions it was only with the utmost difficulty that the librarian could obtain copies of the Transactions of American societies in general. The one place where society Transactions should be is in a great public library. That is where men go to consult such books, for few have space upon the shelves of their private libraries for the enormous number of volumes required for a complete collection of society proceedings, and incomplete collections are of little value. Every society should instruct its secretary or its editor to send the annual volumes to all the medical libraries, and even to some selected general libraries —such as those of the historical societies of the respective States and counties.

We trust that if this comment comes to the eyes of the officials of any society that has hitherto neglected to send its publications to the libraries, they will immediately take steps to remedy that neglect. The Library of the College of Physicians of Philadelphia (which is a scientific society and not a diploma-granting body) is the greatest in America, with the exception of that of the Surgeon-General of the United States Army at Washington. The address of the College is Thirteenth and Locust Streets, Philadelphia. We hope that our cotemporaries will speak of the matter, so as to attract the attention of all societies all over the land.

Non-Experts can Testify as to Value of Services in Caring for the Sick.—In many instances, before a witness can give an opinion, he must be shown to have some special aptitude, skill, or knowledge of the subject; but there are some things coming ordinarily within the observation of all men, as to which any man will be entitled to give his opinion. Thus, opinions as to time, speed of ordinary moving objects, and distances, are received without any proof of special knowledge or skill on the part of witnesses. And it is not necessary, says the Appellate Court of Indiana in the case of Storms *vs.* Lemon (24 N. E. Rep. 644), that one should be an expert, and have special experience, to enable him to be competent as a witness to testify to the value of services rendered in taking care of the sick by a person not a trained nurse. Every man who has arrived at years of maturity must, in the course of Nature, have had more or less experience in caring for the sick, or seeing it done; and when one has seen such services, as they are being rendered, he is competent to give the facts, and then his opinion as to the value of such services, the weight to be given to the opinion being determined by the jury. Besides it would be hard to conceive of a case in which one who has himself rendered a service to another will not himself be competent to give evidence as to its value. Knowing the precise nature of the service rendered, he must have some knowledge of its value, and he is thus competent to give his opinion. It may not be worth much. Its weight, however, is for the jury to decide.

The Curative Influence of Erysipelas.—Though we are yet without the explanation, it is a well-recognized clinical fact that the development of erysipelas in the course of certain other morbid conditions, such as pulmonary tuberculosis and malignant neoplasms, is sometimes followed by the disappearance of the previously existing disease. Future investigation may show that as a result of the presence and activity of the streptococcus erysipelatis certain bodies or substances are generated that exert an antidotal or antagonistic influence upon associated disease-conditions or their products. The uncertainty of the result, both favorable and unfavorable, from the artificial induction or inoculation of erysipelas renders doubtful the justifiability of the universal application of this principle for therapeutic purposes. Our clinical knowledge upon this interesting subject has been increased by the recent report of a case (SCHMIDT, *Centralblatt für Gynäkologie*, 1893, No. 39, p. 900) in which, during the progress of an aggravated attack of gonorrhea, the development of erysipelas was so immediately followed by a permanent disappearance of the urethral symptoms, that the relation could not be looked upon as other than direct and not merely accidental.

SPECIAL MEMORANDUM.

AN ADDITIONAL WORD AS TO THE TREATMENT OF EXOPHORIA.

BY GEORGE M. GOULD, A.M., M.D.,
OF PHILADELPHIA.

I HAVE received such a large number of letters of inquiry as regards the little suggestion *in rê* the treatment of exophoria made in THE MEDICAL NEWS of October 14th, that it has become almost impossible to answer each inquiry individually. I should like to add a word or two in order to classify and explain several points that seem to have been left in some doubt:

1. The treatment of insufficiencies by means of weak prisms "to strengthen the muscles," seems to have been devised and recommended by Dr. Dyer so far back as 1865, and in this field of work that veteran clinician and honored teacher, Dr. Noyes, of New York (and possibly many others), has long carried out this plan, and other excellent modifications of the plan, in his practice. When I wrote my article, as explained at the time, I had had no opportunity to look up the literature of the subject, and did not know of the work of Drs. Dyer and Noyes, nor was I aware of the excellent studies and methods suggested by my friend Dr. Savage, of Nashville, Tenn. To these and any other workers in "prism-gymnastics" I would gladly acknowledge all precedence and give all honor so far as pertains to muscular gymnastic exercises of the eye. This in answer to two correspondents who thought I had not sufficiently done so. But that even these methods of treatment have proved unsatisfactory is evident from the fact that they have not become routine with the general profession, and that in several of the best and most recent books on ophthalmology the method is not even mentioned. (I was, however, in error when I said that the fine treatise of my friend Dr. de Schweinitz had also omitted mention of it, my error being due only to its omission from the index.)

So much for my sins of omission!

2. But it remains to emphasize my contention that I do not aim to "strengthen the muscles," and that with "muscular gymnastics," as such, my plan has nothing in common except the mere use of prisms—very strong

prisms, however, instead of weak ones. If the trouble lay in the peripheral mechanism, then tenotomy or gymnastic exercises with weak prisms would be the proper treatment, and the use of such strong prisms as I advise would be the height of dangerous folly. It seems to me that all previous treatments of heterophoria have looked solely to the muscles, the peripheral condition, as the *fons et origo mali*. Surely all tenotomization proceeds on that assumption, and I as certainly judge that all previous suggestions of "prism-gymnastics" likewise are founded upon the same conception.

3. But it appears to me beyond question that in the vast majority of cases of exophoria, if not in all, the seat of the abnormality is purely, at least primarily, and always principally, central, and innervational. It is not at all a question of tendon-insertions or of muscular strengths. A few of many reasons for so thinking are these:

a. In convergence-adduction, the "muscles" overcoming the maximum of prisms, bases out, that is possible, either internal rectus may be made to greatly increase its contractile power by simply carrying the object to the left or to the right side of the field.

b. Extreme adduction (twenty feet) of exophoric eyes may be doubled, often trebled, in a minute or two by the device of carrying slowly the object gazed at, with weighted convergence-stimulus from the near to the distant point. If, as I said, one can lift with his arms only 200 pounds, one cannot lift 400 or 600 pounds in a minute by any analogous change of the method of lifting.

c. The extreme of primary adduction-power, and even the double of this extreme, may be held continuously for several minutes, even a half-hour or more—I don't know how much longer. The extreme lift of other bodily muscles can only be held an instant, and not only this, but constant and uninterrupted tension or contraction of such muscles in lifting even very small weights is impossible.

d. Besides all this, such constant tension, when solely muscular, is painful, even agonizing, if demanded by the will or by necessity. In the case of exophoria, the extreme of prisms, and even the double of the extreme, bases out, that can at first be held without diplopia, is in a minute or two continuously held without the faintest suggestion of pain or even of discomfort.

e. Muscular tissue, as such, cannot be made to double or treble its volume or its strength in a few hours or days, or even in a few weeks, but such increase of ocular adduction-power I see many times every day.

There are many other such considerations, too numerous to mention, all running to prove the same conclusions.

4. If, therefore, the seat of the difficulty lies in the innervational centers and coördinations, the treatment by tenotomy, or by gymnastic exercises (with weak prisms), seems to fall to the ground. We must instead seek to normalize innervation, leaving the muscles and tendons entirely out of the count. In accordance with this I have sought to break up the bad habit of exophorial innervation, to reëstablish normality in an erroneous nervous coördination, to heighten convergence-stimulus, and to carry this increased stimulus as well as the naturally heightened stimulus of convergence at near range, into distant and all-around seeing.

5. The method I suggest for effecting this normalization of innervation and coördination in exophoria is by what I have called "the weighted convergence-stimulus carried from the near-point to the distant-point." In the great majority of cases of subnormal adducting power, I find that the "weighting" or "handicapping" by prisms, bases out, is at first about double the primary twenty-foot adduction-power. That is, if the patient has only 10° of such adduction-power, we may at first safely give 20° prisms (total) as the handicap, then slowly carry the object gazed at fixedly and continuously from the near-point to the distant-point. This is to be repeated until the eyes with 20° prisms can hold objects all about the room easily. The repetition is to continue several times daily until this increased adduction-power *is habitual*, and until no diplopia is produced on first adjusting the prism-fronts, (or, better, prism-spectacles) and looking at distant objects immediately, and without the device of carrying the object from the near-point to the distant-point. When this condition has been reached, the strength of the "handicap-prisms" is to be increased say, to 25° or to 30°, and the method resumed as before. Before an adduction-power of 30° has been reached the symptoms of asthenopia will long have vanished, but the manifest, or the latent exophoria, will still usually, and to some degree, be present. The treatment with 30° to 40° prisms should be continued until all manifest and latent exophoria has disappeared, and 2° of esophoria have become manifest.

These, of course, are rough and indefinite rules, drawn from my short experience with the method, and they will require adaptation to the peculiarities of each case. Some patients have far greater reaction-power than others, both as to the amount of the "weighting" of the convergence-stimulus permissible or required, and as to the rapidity of the return of normalization of innervation. But in all cases, so soon as increase of adduction-power has become stronger and habitual, we should weight the convergence-stimulus with still stronger prisms, so that effort and the device of slow recession of the object gazed at are (at first) required to avoid diplopia on looking at distant objects.

Since writing my first hurried article, my experience with the method has doubled. In no case has there been anything but the most gratifying success.

Many inquiries about the "battery of prisms" for testing adduction and abduction have been sent me. I have now given an optical firm a plan of a "double battery" that will, I am sure, be far superior to the old model. So soon as the instrument is completed I shall publish the design.

REVIEWS.

A MANUAL OF MEDICAL TREATMENT OR CLINICAL THERAPEUTICS. By I. BURNEY YEO, M.D., F.R.C.P., Professor of Clinical Therapeutics in King's College, London, etc. With illustrations. Two volumes. 12mo, pp. xv, 631, 774. Philadelphia: Lea Bros. & Co., 1893.

AT the present day, when the subject of medicine is so large and the lines of division of its various departments so ill-defined, it is a matter of exceeding difficulty in

writing a practical work to determine what should be included and what excluded.

In a work on "clinical therapeutics" it is a matter of delicate judgment to decide in how far special subjects, not strictly medical, such as dermatologic, laryngologic, neurologic, surgical, and the rest, should receive consideration.

We must, however, confess to a sense of disappointment with this work of Dr. Yeo, for we have learned to repose a good deal of confidence in his writings. Our complaint is not of what is contained in these two volumes, but of what has, intentionally or otherwise, been omitted. We might, perhaps, condone the omission of any consideration of such conditions as akromegaly, syringomyelia, lateral, postero-lateral, and cerebro-spinal sclerosis, progressive muscular atrophy, general paralysis of the insane, paralysis agitans, leprosy, foot-and-mouth disease, glanders, anthrax, actinomycosis, because of their relative incurability; but the same excuse scarcely applies to the absence of any reference to such subjects as syphilis, erysipelas, insolation, yellow fever, epidemic cerebro-spinal fever, relapsing fever, trichiniasis, hydrophobia, purpura, scurvy, rhachitis, alcoholism, and not a few other conditions.

The various subjects are taken up under nine main heads: the organs of digestion; the heart and bloodvessels and the blood and ductless glands; the organs of respiration; pulmonary tuberculosis; the liver; urinary and renal affections; the nervous system; constitutional diseases; specific infective diseases.

The recommendations made include not only strictly medicinal measures, but surgical procedures as well, and a number of good illustrations aid in the elucidation of the text. The subject-matter of these volumes is, on the whole, excellent and reliable, a conservative tendency predominating. The article on pulmonary tuberculosis is conspicuously full and valuable. We are a little dubious, however, as to the wisdom of publishing the "formulæ of well-known physicians," without a willingness to accept the responsibility of recommending them. We have also to regret that Dr. Yeo found it impossible to enter fully into a discussion of the value of cold baths in the treatment of enteric fever, for an abundant clinical experience has demonstrated that in this measure we have the most powerful means at our command for reducing the mortality in this disease. Neither does it seem justifiable to say of a method of treatment, that of tetanus with the tetanotoxin, which has now been employed in some sixteen cases with success, that "it can hardly be said that any very conclusive results have as yet been established."

A PRACTICAL TREATISE ON MATERIA MEDICA AND THERAPEUTICS. By ROBERTS BARTHOLOW, M.A., M.D., LL.D., Emeritus Professor of Materia Medica, General Therapeutics, and Hygiene, in Jefferson Medical College, etc. Eighth edition, revised and enlarged. 8vo, pp. 820. New York: D. Appleton & Co., 1893.

OF all the works on materia medica and therapeutics in the market, Bartholow's most nearly meets the needs of the physician in his daily practice. Hence its great popularity, from the first edition, and hence too the confidence with which we predict an extensive sale for the new edition. In conformity with the new (1890) Pharmacopeia, many new remedies have been introduced, and the metric system of weights and measures has been measurably adopted. Tables of comparison of the old and new systems are given for reference. Of the new remedies excluded from the Pharmacopeia because of their being called by trade-marked names or made by patented process, a number have been discussed—those, namely, that are in the author's opinion of sufficient importance. No secret remedy or nostrum has, however, been discussed. The author's position is the correct one, for, as he points out, his treatise is not an official work like the Pharmacopeia, and he may justly give such information as is needed in the cases of drugs to which the Pharmacopeia could not properly give official recognition.

The book is characterized by the clearness and accuracy of statement, and the fulness with conciseness of treatment, avoiding both prolixity on the one hand and incompleteness on the other, which have made all of Dr. Bartholow's works so valuable to the profession. All that is of importance in regard to the pharmaceutic relations, physiologic action, or clinical utility of the agents discussed is told; and a sufficiency of space is devoted to remedial agents and agencies other than drugs. We conclude, as we began, by affirming our belief that while excelled by such a book as Brunton's for special investigations, yet for the daily use of the physician, Bartholow's *Materia Medica* and *Therapeutics* has no rival.

A HANDBOOK OF OPHTHALMIC SCIENCE AND PRACTICE. By HENRY E. JULER, F.R.C.S., Ophthalmic Surgeon to St. Mary's Hospital; Surgeon to the Royal Westminster Ophthalmic Hospital, London. New (second) edition, revised and enlarged. In one handsome octavo volume of 562 pages, with 201 engravings, 17 colored plates, test-types, and color-blindness tests. Philadelphia: Lea Bros. & Co., 1893.

THIS second edition of Juler's *Handbook* is a great improvement upon the first. It has been found necessary to add about a hundred pages to the text and nearly as many new illustrations, the latter, especially the beautiful photomicrographs, being very excellent, attractive, and praiseworthy. Thus revised, enlarged, and outfitted, this good book is one of the most profusely illustrated works offered, and generally speaking, the best book on the subject that our English confrères have sent us. It has over Berry's more scholarly work the great advantage of simplicity and practicality in the presentation of the subject. There is a clearness and compactness that is rarely attained by English writers and that reminds one of the best French workmanship. The strength of the work lies in its excellent exposition of the clinical aspects of diseases of the eye, and in this department it is usually a safe and reliable guide to the student and general physician. We object, however, to the customary rash haste with which slitting the canaliculus and probing are advised in cases of functional stenoses of the lacrymal drainage-system of the eye.

The parts pertaining to the treatment of ametropia and insufficiency are often in conflict with American practice.

Most American oculists can only smile dissent when advised that mydriatics are unnecessary in the estimation of (seeming) myopia, in patients over thirty years of age, and that adults with three dioptries of hyperopia need to wear correcing glasses only for near work.

Appendices containing formulæ and Snellen's reading types, and a better index than is usual, are commendable features.

It is, of course, an excellent piece of printing and bookmaking.

A SYNOPSIS OF CLINICAL SURGERY DURING THE SERVICE OF SAMUEL H. PINKERTON, M.D., SURGEON TO THE HOLY CROSS HOSPITAL. By FRANKLIN A. MEACHAM, A.B., M.D., Assistant Surgeon to the Holy Cross Hospital, Salt Lake City, Utah. Illustrated. 12mo, pp. 145. Salt Lake City Tribune Job Printing Company, 1893.

THIS little brochure is a compilation of 632 miscellaneous operations performed for the most part during the past year, some of which are of considerable surgical interest. The total number of deaths is seventeen, or 2.6 per cent., eleven of which, it is stated, were *in extremis* at the time of operation.

The celiotomies are interesting on account of the high mortality, which was 24.3 per cent., six of the cases being *in extremis* at the time of operation. These include ligation (fatal) of the common iliac artery by the new intra-peritoneal method of Treves, and successful operations for a large cyst of the pancreas, an echinococcus-cyst of the gall-bladder, nephrorrhaphy, and nephrolithotomy. The most fatal cases seem to have been those strictly belonging to gynecology, in which success has been so uniformly achieved by the operators of Philadelphia in particular.

The operations for tuberculous disease merit criticism, as amputation for ankle-joint disease and amputation for ankylosis are seldom performed. Modern ideas upon articular disease have been revolutionized by antiseptic methods, iodoform-injections, and the American method of extension in the treatment of joint-disease. Of twelve operations for tuberculous joint-disease six were amputations, three through the lower third of the thigh, one at the hip, two at the lower third of the leg. When we consider that excision was introduced by MacCormick as a substitute for amputation, and that modern surgeons reserve amputation as a life-saving measure, the importance and force of these criticisms will be appreciated. In justice, however, it must be stated that all of the patients ultimately recovered from the excisions and amputations.

AN ACCOUNT OF BELLEVUE HOSPITAL. With a Catalogue of the Medical and Surgical Staff from 1736 to 1894. Edited by ROBERT J. CARLISLE, M.D. Published by the Society of the Alumni of Bellevue Hospital. 8vo, pp. 381. New York, 1893.

WE find in this handsome and attractive volume a very well written and interesting sketch of the development of a vast and thoroughly-equipped hospital, having in connection with it a medical school of high repute. And besides its purely historic interest, the work contains much material of value to all who are concerned in the management of like institutions.

On the first page it is claimed that Bellevue is the oldest hospital in this country. But this claim does not seem to us to be substantiated. There was a poorhouse in New Amsterdam, and a hospital was established in 1658. Of the latter it is merely said: "This institution still remained in 1680, for in that year what was known as the 'Old Hospital' or 'Five Houses' was sold, and a better building provided." But the poorhouse, which was not only a home for paupers, but also a Bridewell or house of correction, existed as such until 1811; "when," says the editor, "the third almshouse was about to be built, and the hospital thenceforward gradually to become the most important part of the establishment." This seems to have been the true beginning of Bellevue Hospital.

Upon the later pages of this history are to be found many names of men eminent in medicine and in surgery. Nor are there wanting accounts of those—of whom our profession may be as justly proud—who gave up their lives in the discharge of their duty to the sick.

THREE INTRODUCTORY LECTURES ON THE SCIENCE OF THOUGHT. By F. MAX MUELLER. With an Appendix of Correspondence. Chicago: Open Court Publishing Co., 1893.

THESE lectures were delivered in 1887. In his strenuous contention that thought and language are identical, Professor Mueller makes the common mistake of analyzing his own thought-processes, and reasoning from them back to the beginning. If he would study children he would soon see that thought precedes language, and is carried on without the aid of words or signs. Naturally such thought is limited. After one learns to speak he finds his thought increased in definiteness and his thinking rendered easier by the use of words; yet even in the most advanced brain some thinking goes on automatically without words, suddenly forcing itself into consciousness in the form of words.

In the letters collected in the appendix, Mr. Galton and Mr. Romanes have given other examples fatal to Professor Mueller's theory. Indeed, Mr. Galton's letters are the best things in the volume.

Notwithstanding his fundamental error, the author's work is interesting and, in many collateral relations, instructive.

NEWS ITEMS.

Virchow celebrated, on October 21st, the fiftieth anniversary of his accession to the doctorate.

Twelfth International Medical Congress.—It is announced that the Russian Government contemplates inviting the Twelfth International Medical Congress to be held in Russia, probably at St. Petersburg.

Sir Andrew Clark, the distinguished English physician, was stricken with apoplexy on October 19th, right hemiplegia and aphasia developing, and death taking place on November 6th, at the age of sixty-seven years. Sir Andrew was the President of the College of Physicians of London, and the foremost medical man in England.

The Medical Society of the University of Maryland has been organized, with the following officers: President,

Dr. J. J. Chisolm: Vice-President, Dr. C. W. Mitchell; Secretary, Dr. W. B. Canfield; Executive Committee, Drs. J. E. Michael, W. B. Platt, and J. M. Hundley. The society will meet on the first Tuesday of each month and will be composed of the faculty, adjunct faculty, members of the teaching and hospital staffs, and graduates of the University.

BOOKS AND PAMPHLETS RECEIVED.

Subjective Alteration of the Pitch of Sounds in the Partially Deaf. By E. B. Gleason, M.D. Reprinted from the International Medical Magazine, 1893.

Extraction of Steel from the Interior of the Eye with the Electro-magnet. By Alvin A. Hubbell, M.D. Reprinted from the Transactions of the New York State Medical Association, 1893.

Congenital Ptosis with Synchronous Movements of the Affected Lid and Lower Jaw. By Alvin A. Hubbell, M.D. Reprinted from the Archives of Ophthalmology, 1893.

A History of Surgery in South Carolina. By Edward Frost Parker, M.D. Reprinted from the North Carolina Medical Journal, 1893.

Two Cases of Sterility and Impotence following the Left Lateral Operation for Stone. By Orville Horwitz, B.S., M.D. Reprinted from the Journal of the American Medical Association, 1893.

The Character, Object, and Scope of the Medical Profession, By J. F. Gruwell, A.M., M.D. Pamphlet. Alliance, Ohio: Scranton & Hoiles, printers, 1893.

Transactions of the American Dermatological Association, at its Sixteenth Annual Meeting, New London, Conn., September, 1892. Official Report of the Proceedings, by George Thomas Jackson, M.D., Secretary. New York, 1893.

Bulletin of the Harvard Medical School Association, No. 4. Boston: Published by the Association, May, 1893.

Prospectus of the College of Pharmacy of the City of New York, 1893–94.

U. S. Department of Agriculture: Farmers' Bulletin, No. 12. Nostrums for Increasing the Yield of Butter. By Harvey W. Wiley, Chemist of the U. S. Department of Agriculture. Washington: Government Printing Office, 1893.

Points of Similarity Between Us and Homeopathic Physicians. By John B. Roberts, A.M., M.D. Reprinted from the Transactions of the Philadelphia County Medical Society, 1893.

Die Zaraath (Lepra) der Hebräischen Bibel. Von G. N. Munich. Hamburg und Leipzig: Verlag von Leopold Voss, 1893.

Reminiscences of the Founders of the Woman's Hospital Association. By Thomas Addis Emmet, M.D. Reprinted from the New York Journal of Gynecology and Obstetrics, 1893.

Sexual Weakness and Impotence. By Edward Martin, M.D. Physician's Leisure Hour Library. Detroit, Mich.: George S. Davis, 1893.

Typhus Fever. By David Cerna, M.D. Reprinted from the St. Louis Medical Review, 1893.

Colotomy. By Charles B. Kelsey, M.D. Reprinted from the Therapeutic Gazette, 1893.

Akromegaly, with the Clinical Report of a Case. By Archibald Church, M.D., and William Hessert, M.D. Reprinted from the Medical Record, 1893.

Laparotomy and Removal of Cystic Tumor (Cysto-adenoma) of Peritoneum; Formation of an Artificial Anus; Subsequent Laparotomy and Resection of Colon; Closure of Artificial Anus; Recovery. By W. Page McIntosh, M.D. Reprinted from the American Journal of the Medical Sciences, 1893.

The Rôle of the Cell. By J. Wellington Byers, M.D. Reprinted from the American Therapist, 1893.

Cholecystotomy. By Edwin Ricketts, M.D. Pamphlet. Cincinnati, 1892.

Hematomyelia and Acute Myelitis. By Joseph Collins, M.D. Reprinted from the Medical Record, 1893.

The Clinical Value of Repeated Careful Correction of Manifest Refractive Error in Plastic Iritis. By Charles A. Oliver, M.D. Reprinted from the Transactions of the American Ophthalmological Society, 1892.

Ottantadue Tracheotomie e Ottantaquattro Intubazioni, come Contributo alla Statistica. Dott. Francesco Egidi di Roma. Firenze: Tipografia Coöperativa, 1893.

Remarks on the Presentation of Diplomas to the Graduating Class of Barnes Medical College. By C. H. Hughes, M.D. Reprinted from the Alienist and Neurologist, 1893.

Deformities of the Nasal Septum and their Influence on Diseases of the Ear and Throat. By William Scheppegrell, A.M., M.D. Reprinted from the New Orleans Medical and Surgical Journal, 1893.

Charaka-Samhita. Translated into English. Published by Avinash Chandra Kaviratna. Calcutta: D. C. Cass & Co.,

Neuritis and Myelitis and the Forms of Paralysis and Pseudo-paralysis following Labor. By Charles K. Mills, M.D. Reprinted from the University Medical Magazine, 1893.

A Concise Disquisition of the English Language, and a Plea for Improving its Orthography. By J. P. Gruwell, M.D. Pamphlet. Alliance, Ohio: R. M. Scranton, 1893.

Treatment of Suppurating Bubo. By Orville Horwitz, B.S., M.D. Reprinted from the Medical Record, 1893.

The Real Rewards of Medicine. By W. W. Keen, M.D., LL.D. Reprinted from the College and Clinical Record, 1893.

Surgical Clinic. By Nicholas Senn, M.D., Ph.D. Reprinted from the Chicago Clinical Review, 1893.

Fifteenth Annual Report and Proceedings of the Fifteenth Annual Meeting of the Charity Organization of Buffalo, N. Y., for the year 1892.

Apparent and Actual Mortality. By F. D. Bullard, A.M., M.D. Reprinted from the Southern California Practitioner, 1893.

Punctured Wounds of the Feet. A Report of Two Hundred and Three Cases treated at the Medical Bureau, World's Columbian Exposition, during the "Construction Period," June 1, 1851, to May 1, 1893. By S. C. Plummer, A.M., M.D. Reprinted from the Chicago Medical Recorder, 1893.

Twenty-seven Years' Addiction to Opium; Recovery; Relapse. By J. B. Mattison, M.D. Reprinted from the New England Medical Monthly, 1893.

Cocain Inebriety. By J. B. Mattison, M.D. Reprinted from the Medical Record, 1893.

The Mattison Method in Morphinism. By J. B. Mattison, M.D. Reprinted from the Universal Medical Journal, 1893.

Weekly Abstract of Sanitary Reports issued by the Supervising Surgeon-General, Marine-Hospital Service. Under the National Quarantine Act of April 29, 1878. Vol. VII. Washington: Government Printing Office, 1893.

Bureau of Education. Circular of Information, No. 1. Shorthand Instruction and Practice. By Julius Ensign Rockwell. Washington: Government Printing Office, 1893.

The Treatment of Cholera by Hypodermoclysis and Enteroclysis. By Judson Daland, M.D. Reprinted from the American Journal of the Medical Sciences, 1893.

The Causation of Inflammation: A Review. By Harry Friedenwald, A.B., M.D. Reprinted from the New York Medical Journal, 1893.

The Interrupted Blood-columns in the Vessels of the Eye. By Harry Friedenwald, A.B., M.D. Reprinted from the Ophthalmic Review, 1893.

Cranial Deformity and Optic-Nerve Atrophy. By Harry Friedenwald, A.B., M.D. Reprinted from the American Journal of the Medical Sciences, 1893.

Cholera: How Shall We Escape It? By H. A. Arnold, M.D. Pamphlet. Scranton, 1893.

The Stoechiological Cure of Consumption and Diseases of the Respiratory Organs. From Letters to a Patient. By John Francis Churchill, M.D. Second edition. London: David Stott, 1893.

Treatment of Summer Diarrhea of Children. By T. M. Baird, M.D. Reprinted from the Hot Springs Medical Journal, 1893.

Cholecystotomy. By Edwin Ricketts, M.D. Cincinnati, 1892.

Therapeutics of Cholera (Asiatic Cholera). By P. C. Majumdár, M.D. Philadelphia: Boericke & Tafel, 1893.